IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

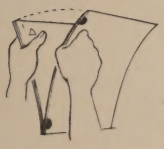
This PHOTOFACT Folder Set is

WIRE-SEALED FOR YOUR PROTECTION

to guarantee completeness of contents

DO NOT ACCEPT IF SEAL HAS BEEN BROKEN

TO OPEN ***JUST DO THIS:***

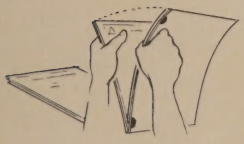


1

Take hold of the Set with both hands. Place your thumbs directly under the top wire-seal; then, divide the contents equally by putting your thumbs midway through the thickness of the Set. Now, pull the two sections apart at the top, firmly.

2

Repeat this process, pulling close to the wire-seal at the bottom, so that the set is now divided into two equal parts.



3

Continue this "pulling-apart" process with the section in which the wire-seals remain, dividing it in half.

4

Finally, remove the wire-seals left in the last section; this can easily be done with your fingernail or any sharp instrument.

Your "Safety-Sealed" PHOTOFACT Set is now ready for profit-making use . . .

IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

The PHOTOFACT® Servicer

SET 528 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ APRIL 1961

CONTENTS PHOTOFACT SET 528

TRADE NAME AND MODEL	SET AND FOLDER NO.
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ZENITH	
Chassis 3F21, 7F32, 9F27, 16E24Q, 16F24Q, S-48563, S-50384	528-2
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Model 954S	528-3
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PHILCO	
T-70-124	528-12
SILVERTONE	
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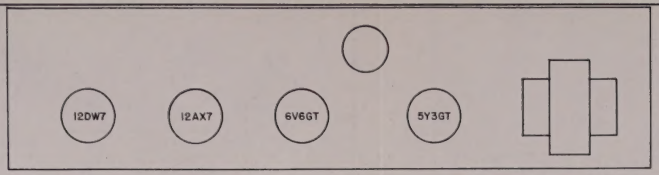
This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

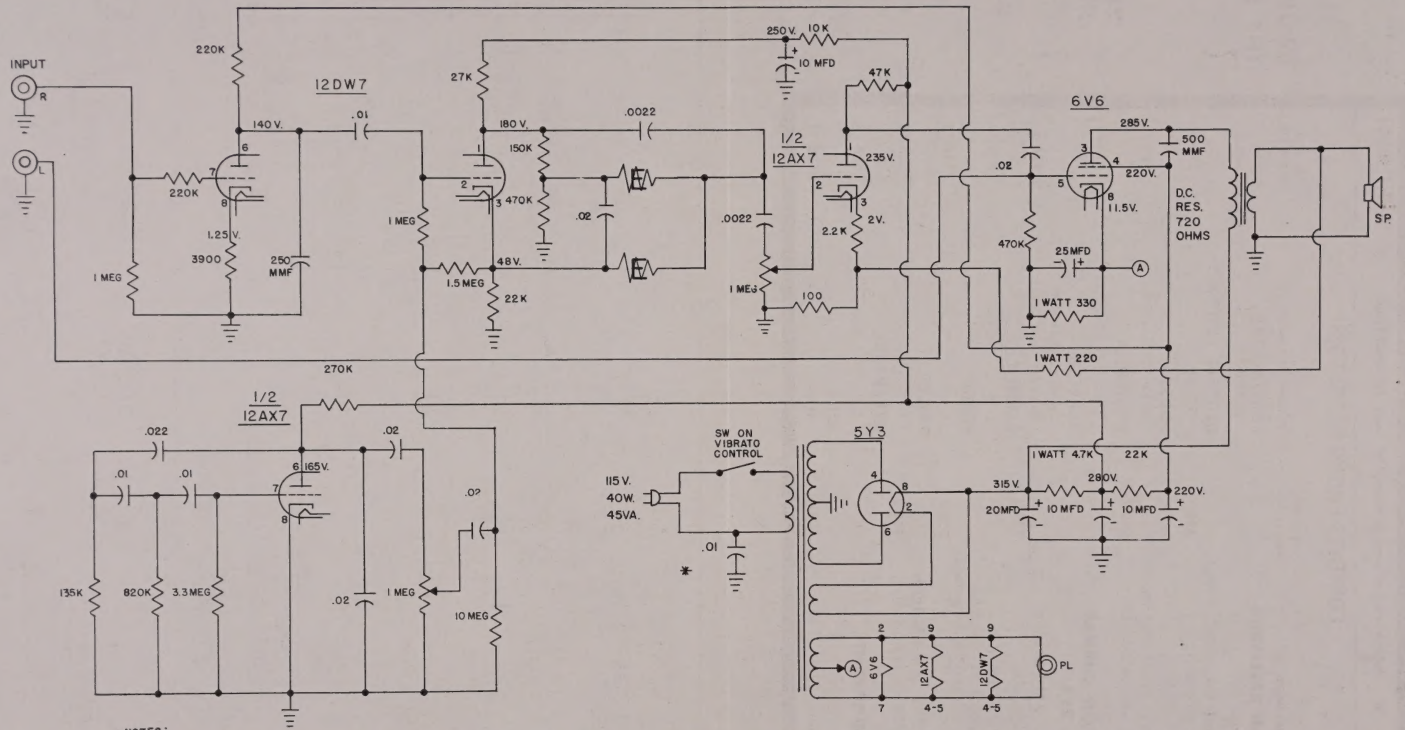
IN THIS ISSUE OF THE SERVICER:

Hallicrafters Models 5R35, 5R36, 5R37, 5R38, 5R39 (RUN 1)

Silvertone Chassis 157.47100



TUBE LAYOUT



NOTES:

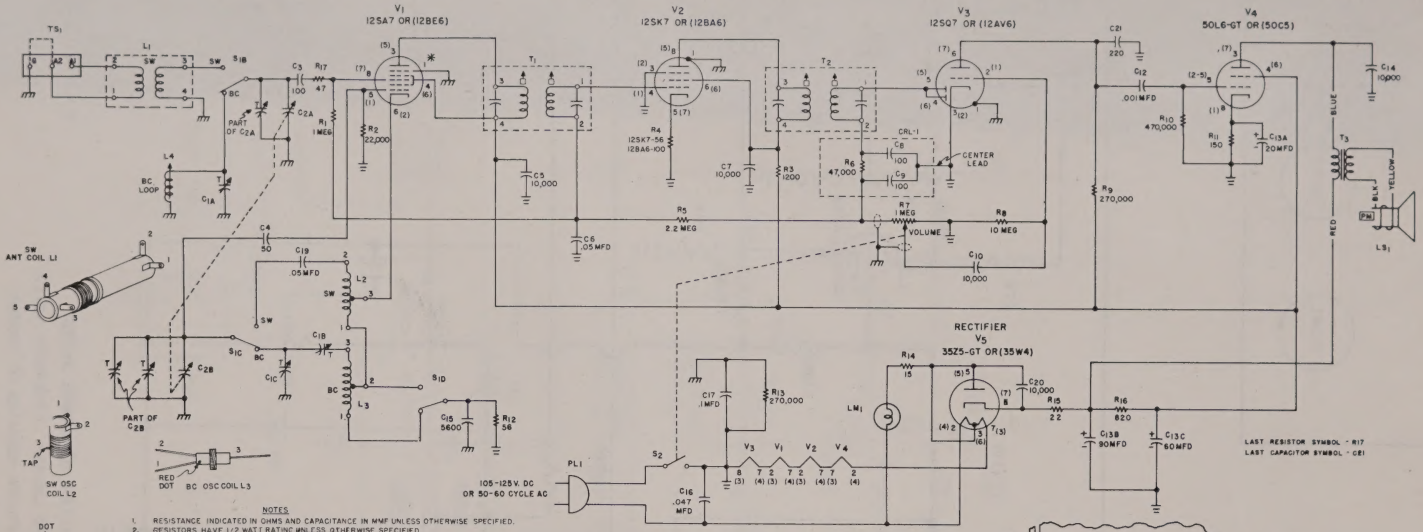
1. ALL RESISTORS 1/2 WATT UNLESS OTHERWISE NOTED.
2. VALUES OF CAPACITORS IN MFD UNLESS OTHERWISE NOTED.
3. VOLTAGES MEASURED FROM POINTS INDICATED TO GROUND WITH 20,000 OHM/VOLT METER.

* MAY NOT APPEAR IN SOME MODELS

SILVERTONE CHASSIS 157.47100

Schematic Diagram Courtesy of Sears Roebuck & Company

HALLICRAFTERS MODELS 5R35, 5R36, 5R37, 5R38, 5R39 (RUN 1)

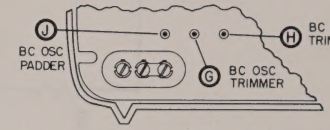


NOTES

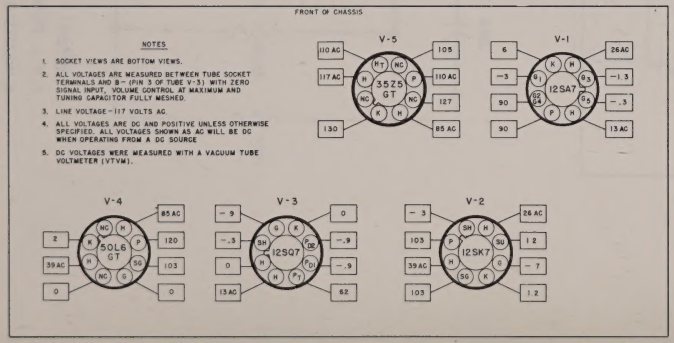
1. RESISTANCE INDICATED IN OHMS AND CAPACITANCE IN MMF UNLESS OTHERWISE SPECIFIED.
2. RESISTORS HAVE 1/2 WATT RATING UNLESS OTHERWISE SPECIFIED
3. INTERMEDIATE FREQUENCY = 455 KC
4. SW-BC SWITCH SHOWN IN BC POSITION (CLOCKWISE)
5. CHASSIS
6. B- (COMMON GROUND)
7. GRID NO. 5 OF THE 12BE6 IS CONNECTED INTERNALLY TO PIN (2).
8. ( ) TUBE PIN NUMBERS ENCLOSED IN PARENTHESES ( ) ARE FOR THE MINIATURE TYPE TUBES.

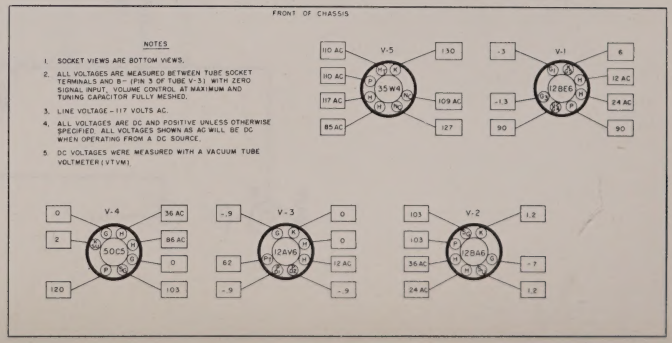
IF 'X' FMRS
T1 (#50B524) &
T2 (#50B525)

VALUES AND TOLERANCES SHOWN ARE NOMINAL AND VARIATIONS MAY BE FOUND. IT IS RECOMMENDED THAT THE VALUE OF ANY REPLACEMENT CORRESPOND TO THE NOMINAL VALUE OF THE PART BEING REPLACED



Rear View of Receiver Showing Location of Alignment Adjustments


FRONT OF CHASSIS
NOTES
1. SOCKET VIEWS ARE BOTTOM VIEWS.
2. ALL VOLTAGES ARE MEASURED BETWEEN TUBE SOCKET TERMINALS AND B- (PIN 3 OF TUBE V-3) WITH ZERO SIGNAL INPUT, VOLUME CONTROL AT MAXIMUM AND TUNING CAPACITOR FULLY MESHED.
3. LINE VOLTAGE - 117 VOLTS AC.
4. ALL VOLTAGES ARE DC AND POSITIVE UNLESS OTHERWISE SPECIFIED. ALL VOLTAGES SHOWN AS AC WILL BE DC WHEN OPERATING FROM A DC SOURCE.
5. DC VOLTAGES WERE MEASURED WITH A VACUUM TUBE VOLTMETER (VTVM).
V-5
35Z5 GT
V-1
12SA7
V-4
50L6 GT
V-3
12SQ7
V-2
12SK7


FRONT OF CHASSIS
NOTES
1. SOCKET VIEWS ARE BOTTOM VIEWS.
2. ALL VOLTAGES ARE MEASURED BETWEEN TUBE SOCKET TERMINALS AND B- (PIN 3 OF TUBE V-3) WITH ZERO SIGNAL INPUT, VOLUME CONTROL AT MAXIMUM AND TUNING CAPACITOR FULLY MESHED.
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5. DC VOLTAGES WERE MEASURED WITH A VACUUM TUBE VOLTMETER (VTVM).
V-5
35W4
V-1
12BE6
V-4
50C5
V-3
12AV6
V-2
12BA6

Schematic Diagram Courtesy of The Hallicrafters Co.

PHOTOFACT® Folder

INDEX

A cumulative index is included as a part of this Folder. Upon finding that a new tube is not listed on the roll chart of a tester covered in this service, refer to the latest Tube Tester Data Index to determine in which PHOTOFACT Set the data was published. If listed, reference to that Folder will provide the necessary data.

TUBE TYPES	JACKSON 598, 648, and 658 See PHOTOFACT Set No.	TUBE TYPES	JACKSON 598, 648, and 658 See PHOTOFACT Set No.	TUBE TYPES	JACKSON 598, 648, and 658 See PHOTOFACT Set No.
2EV5	512	6CD7	512	6HS8	524
2FQ5	524	6CQ4	528	8ET7	516
2FY5	512	6EQ7	516	12BZ6	524†
3ES5	524	6ES8	524†	12DY8	516
3EV5	512	6FA7	524	12GW6	528
4ES8	524	6FG7	516	13EM7	512
4GS8	516	6FQ5	524	17GW6	528
5DJ4	528	6FS5	520	19EZ8	524
6AJ8	524†	6FW5	520	34GD5	508
6AL3	524	6GW6	528	VR75	524†
6CB5	524†	6GW8	528	7695	512
6CB6	524†	6HG8	528	7701	520
6CD6	524†	6HJ8	516	7716	520

† See Correction Notice

JACKSON MODEL 598

SET 528

SUPPLEMENTS LATEST ROLL CHART 598-3

Tube Type	A.	B.	C.	Fil. Cont.	D.	E.	F.	G.
5DJ4	5.0	2	1357	8	4			18
	"	2	"		6			18
6CQ4	6.3	8		7	5			17
6GW6	6.3	2		7	0	5	4Y	19
6GW8	6.3	4Y		5	6	8	3	25
	"	4Y			9	1Z		80
6HG8	6.3	4YZ		5	8	2	9	68
	"	4Z			7	6		35
12GW6	12.6	2		7	0	5	4Y	19
15EA7	15.	7Z		8	5	4		65
	"	7			2	1		18
17GW6	17.	2		7	0	5	4Y	19

JACKSON MODEL 648

SET 528

SUPPLEMENTS LATEST ROLL CHART 648-24

Tube Type	Fil.	D.	E.	Plate Test
5DJ4	5.0	13	5	18 W
	"	13	8	18 W
6CQ4	6.3	234	6	14 W
6GW6	6.3	123	AB569	17 W
6GW8	6.3	129	AB378	18 WZ
	"	125	AC46	36 WX
6HG8	6.3	A1234	B567	40 YZ
	"	123	AC89	15 XZ
12GW6	12.6	123	AB569	17 W
15EA7	15.	A238	AC56	75 YZ
	"	234	A17	13 WZ
17GW6	17.	123	AB569	17 W

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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JACKSON
MODEL 658

SUPPLEMENTS LATEST ROLL CHART 658-4

Tube Type	Sec.	Heater	Circuit H-K	Circuit P-G	Plate	Grid Test	Heater Current	
5DJ4	D	6.4F	13	5	20R	V		
	D	"	13	8	"	V		
6CQ4	D	6.4L	234	6	18U	V		
6GW6	P	6.4M	123	ab560	20R	70VY•		
6GW8	P	6.4J	129	ab378	30Q	30VY•		
	T	"	125	ac46	34Q	8XY•		
6HG8	P	6.4J	1234	b567	30R	10WY•		
	T	"	123	ac89	16S	15WY•		
12GW6	P	13.6H	123	ab560	20R	70VY•	A22.J	Z600
15EA7	T	18.6E	238	ac56	60Q	10WY•		
	T	"	234	a17	18R	80VY•	A22.J	Z450
17GW6	P	18.6K	123	ab560	20R	70VY•	A22.P	Z450

PHOTOFACT® Folder

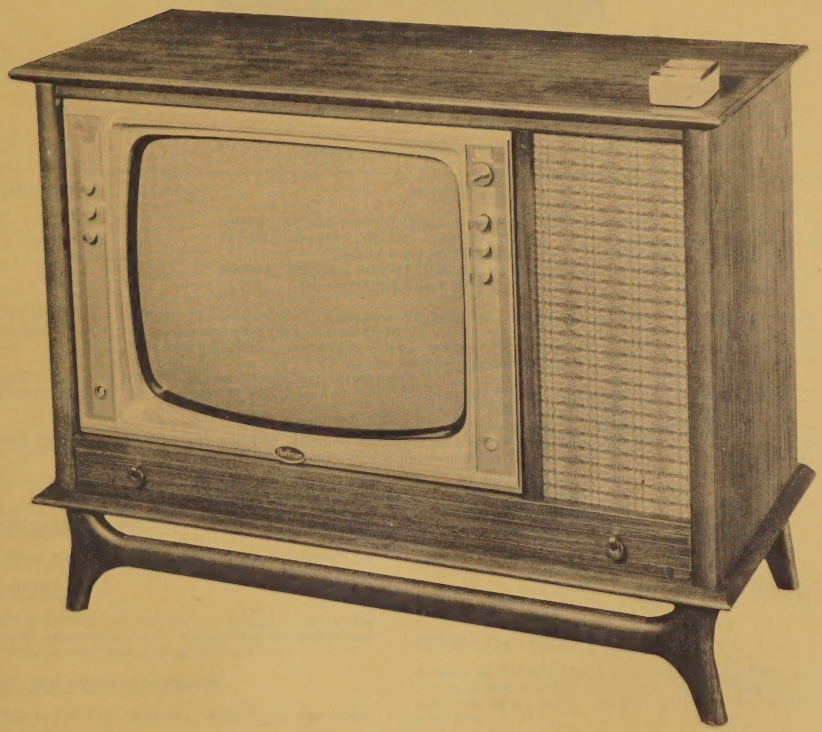
HOFFMAN CHASSIS 357, 359, 307005, 307006, 307007, 307008

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

HOFFMAN CHASSIS 357, 359, 307005, 307006, 307007, 307008



HOFFMAN CHASSIS 357, 359, 307005, 307006, 307007, 307008

MODEL WR3853 (TV CH. 359)

SET 528 FOLDER 1

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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MODEL WR3853 (TV CH. 359)

TRADE NAME	HOFFMAN	MODELS — TV Chassis
		BR3813, BR3823, BR3833, KR3843, MR3813, MR3823, MR3833, SPR3813, SPR3833, WR3813, WR3823, WR3833, WR3843 (with Remote Control Receiver 307008 and Transmitter 307007) 357
		MR3853, SPR3853, WR3853 (with Remote Control Receiver 307006 and Transmitter 307005) 359
MANUFACTURER	Hoffman Electronics Corp., Consumer Products Div., 6200 S. Avalon Blvd., Los Angeles 3, Calif.	
TYPE SET	Television Receiver (with Remote Control)	
TUBES	TV: VHF - Eighteen	Remote Control Receiver 307006: Four Remote Control Receiver 307008: Four
TRANSISTOR	Remote Control Transmitter 307005: One	
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING TV with Remote Control Receiver 307006: 230 Watts, 2.1 Amp. @ 117 Volts AC (255 Watts, 2.45 Amp. While Tuning)
TUNING RANGE	Channel 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)	

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

The safety glass is an integral part of the picture tube.

FUSE DEVICE

A Circuit Breaker is used for low voltage power supply protection, and may be reset by depressing the reset button. (For location, see "Tube Placement Chart".)

TUNER OSCILLATOR ADJUSTMENT

To touch up the VHF Oscillator, remove the rear cover.

AGC

The AGC may be varied by means of an AGC Control. (For location, see "Tube Placement Chart".)

FOCUS

The focus may be varied by means of a Focus Control. (For location, see "Tube Placement Chart".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The Horizontal Frequency Slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

WIDTH

The width may be varied by a Horizontal Size Switch. (For location, see "Tube Placement Chart".)

HORIZONTAL LINEARITY

A piece of tin foil is taped to the neck of the picture tube for horizontal linearity correction. When picture tube replacement is necessary, remove foil and tape to replacement tube.

BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the A. M. Reject. (Buzz) Control for MINIMUM buzz and maximum sound. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

HOFFMAN CHASSIS 357, 359, 307005, 307006, 307007, 307008

SET 528 FOLDER 1

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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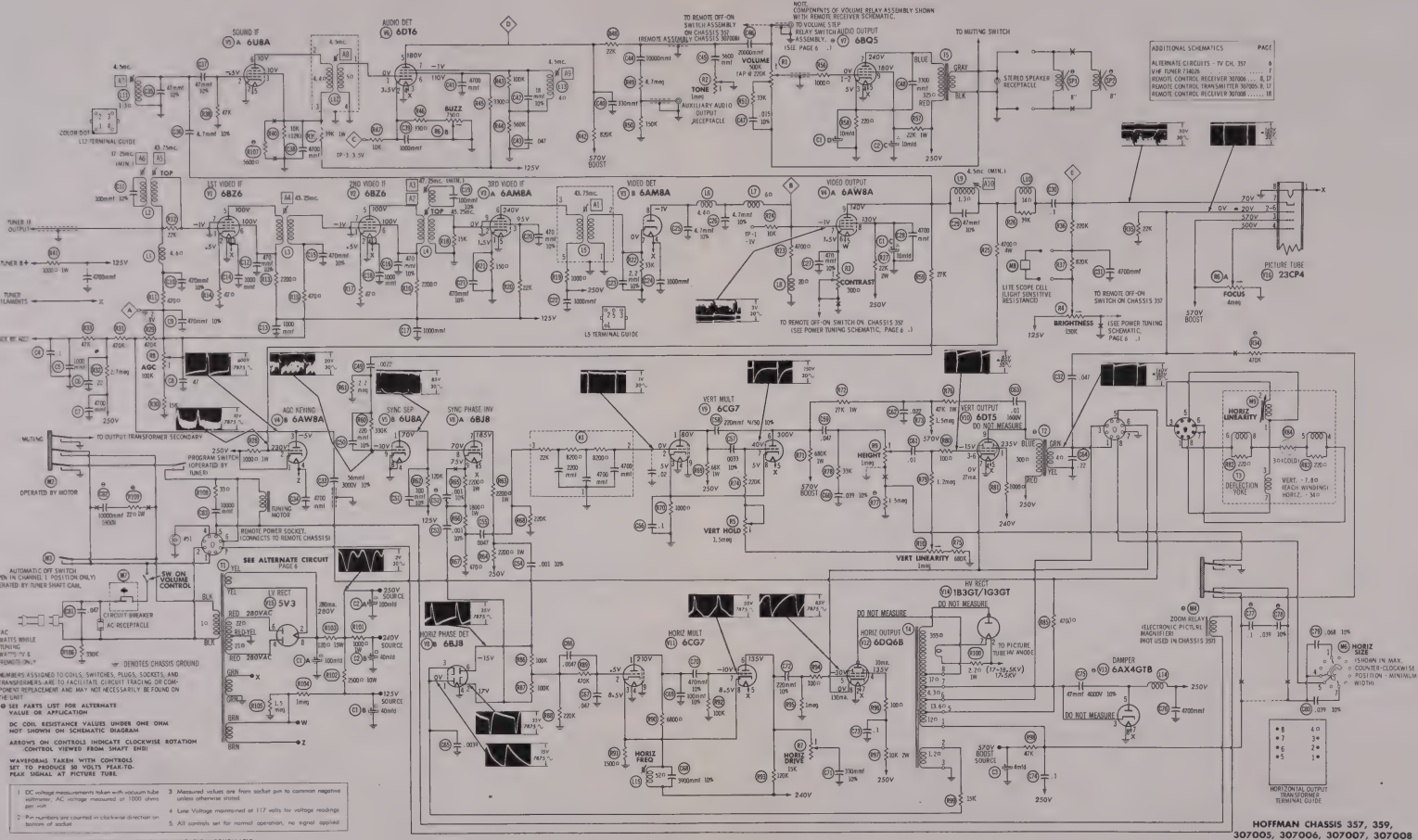
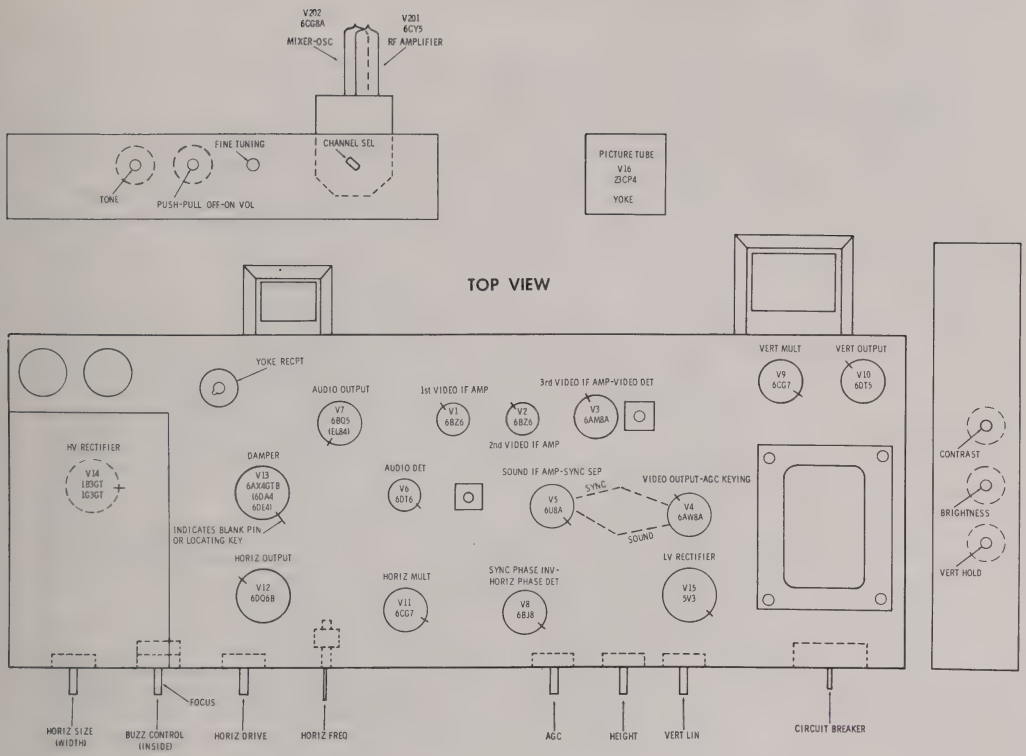

SOUND IF
AUDIO DET
6DT6
6BZ6
6AM8A
6AW8A
6CG7
6DT5
6BJ8
6AW8A
6U8A
5V3
6DQ5
6DQ6B
6AX4GTB
1B3GT/1G3GT
23CP4
TUNER IF OUTPUT
TUNER B+
TUNER FILAMENTS
AGC
AGC KEYING
SYNC SEP.
SYNC PHASE INV.
VERT MULT.
VERT OUTPUT
VERT HOLD
VERT LINEARITY
HEIGHT
HORIZ PHASE DET.
HORIZ MULT.
HORIZ OUTPUT
HORIZ DRIVE
HORIZ FREQ.
HV RECT.
DAMPER
VIDEO DET.
VIDEO OUTPUT
CONTRAST
BRIGHTNESS
FOCUS
HORIZ LINEARITY
HORIZ SIZE
VOLUME
TONE
BUZZ
PICTURE TUBE
DEFLECTION YOKE
TUNING MOTOR
AUTOMATIC OFF SWITCH
ON VOLUME CONTROL
CIRCUIT BREAKER
AC RECEPTACLE
REMOTE POWER SOCKET
SEE ALTERNATE CIRCUIT
TO MUTING SWITCH
TO OUTPUT TRANSFORMER SECONDARY
PROGRAM SWITCH
DO NOT MEASURE
ZOOM RELAY
570V BOOST
125V
250V
240V
117VAC
25 WATTS WHILE TUNING
250 WATTS TV & REMOTE ONLY
DENOTES CHASSIS GROUND
ADDITIONAL SCHEMATICS PAGE
ALTERNATE CIRCUITS - TV CHL 357 6
VHF TUNER 7340/6 7
REMOTE CONTROL RECEIVER 307006 ..... 8, 17
REMOTE CONTROL TRANSMITTER 307005, 8, 17
REMOTE CONTROL RECEIVER 307008 18
NOTE: COMPONENTS OF VOLUME RELAY ASSEMBLY SHOWN WITH REMOTE RECEIVER SCHEMATIC.
TO REMOTE OFF-ON SWITCH ASSEMBLY ON CHASSIS 357 307008
TO VOLUME STEP RELAY SWITCH AUDIO OUTPUT ASSEMBLY.
(SEE PAGE 6 ..)
TO REMOTE OFF-ON SWITCH ON CHASSIS 357
(SEE POWER TUNING SCHEMATIC, PAGE 6 ..)
LITE SCOPE CELL (LIGHT SENSITIVE RESISTANCE)
(SEE POWER TUNING SCHEMATIC, PAGE 6 ..)
AUXILIARY AUDIO OUTPUT RECEPTACLE
STEREO SPEAKER RECEPTACLE
COLOR DOT
L12 TERMINAL GUIDE
L5 TERMINAL GUIDE
HORIZONTAL OUTPUT TRANSFORMER TERMINAL GUIDE
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION CONTROL VIEWED FROM SHAFT END
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1 DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured at 1000 ohms per volt.
2 Pin numbers are counted in clockwise direction on bottom of socket
3 Measured values are from socket pin to common negative unless otherwise stated.
4 Line Voltage maintained at 117 volts for voltage readings
5 All controls set for normal operation, no signal applied
A PHOTOFACT STANDARD NOTATION SCHEMATIC
©Howard W. Sams & Co., Inc. 1961
HOFFMAN CHASSIS 357, 359, 307005, 307006, 307007, 307008

TUBE PLACEMENT CHART
T V



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Circuit Breaker, V15

SWEEP FAILURE
No raster, has sound V11, V12, V13, V14, V16
No vertical deflection V9, V10
Poor vert. linearity or foldover V9, V10
Poor horiz. linearity or foldover V11, V12, V13
Narrow picture V11, V12, V13, V15
Vert. off freq. V9
Horiz. off freq. V8, V11

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V16
Has pic, no sound V5, V6, V7
Overloaded picture V4

SYNC FAILURE
No vert. sync V5, V8
No horiz. sync V5, V8
No vert. or horiz. sync V5, V8

HOFFMAN CHASSIS 357, 359, 307005, 307006, 307007, 307008

FOLDER 1

ALIGNMENT INSTRUCTIONS

TV

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Connect bias as under "Video IF Alignment".
Suggested Alignment Tools: GENERAL CEMENT #8282, 8606, 8606L, 9295
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough generator output to provide a usable indication on VTVM.
Use only enough sweep generator output to provide a usable pattern on scope.
Connect the negative lead of a 3 volt bias supply to point (A). Positive to chassis.
Connect a 1000mmf capacitor across VTVM and scope leads.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	Not used	43.75MC	Set Selector Between Channels	USE VTVM DC probe thru 10K to point (B). Common to chassis.	A1	Adjust for maximum deflection.
2.	"	"	45.25MC	"	"	A2	"
3.	"	"	47.25MC	"	"	A3	Adjust for MINIMUM deflection.
4.	"	"	43.25MC	"	"	A4	Adjust for maximum deflection.
5.	"	"	43.75MC	"	"	A5	"
6.	"	"	47.25MC	"	"	A6	Adjust for MINIMUM deflection.
7.	"	"	45.5MC	"	"	Mixer Plate Coil	Adjust for maximum deflection.
8.	"	44.0MC (10MC Swp)	45.0MC 45.75MC	"	Vert. Amp. thru 10K to point (B). Low side to chassis.		Check for response similar to Fig. 1. If necessary, retouch A1, A2 and A4 for desired response.

SOUND IF ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	High side thru .005mfd to point (B). Low side to chassis.	4.5MC (Unmod)	Between channels	DC probe thru 10K to point (C). Common to chassis.	A7, A8	Detune A9 by turning core fully clockwise. Adjust A7 and A8 for maximum deflection. Reduce the signal generator output to keep meter reading between 3.5 and 4.5 volts at all times.
10.	"	"	"	DC probe thru 10K to point (D). Common to chassis	A9	Increase generator output to maximum and adjust A9 for MINIMUM deflection. Continue turning core counter-clockwise until meter reads from 97 to 103 volts.
11.	Tune in a TV station and if necessary, retouch A9 SLIGHTLY for undistorted sound.					

4.5MC TRAP ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
12.	High side thru .005mfd to point (B). Low side to chassis.	4.5MC (Unmod)	Between Channels	RF probe to point (E). Common to chassis.	A10	Adjust for MINIMUM deflection.

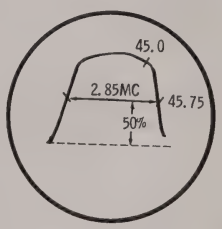
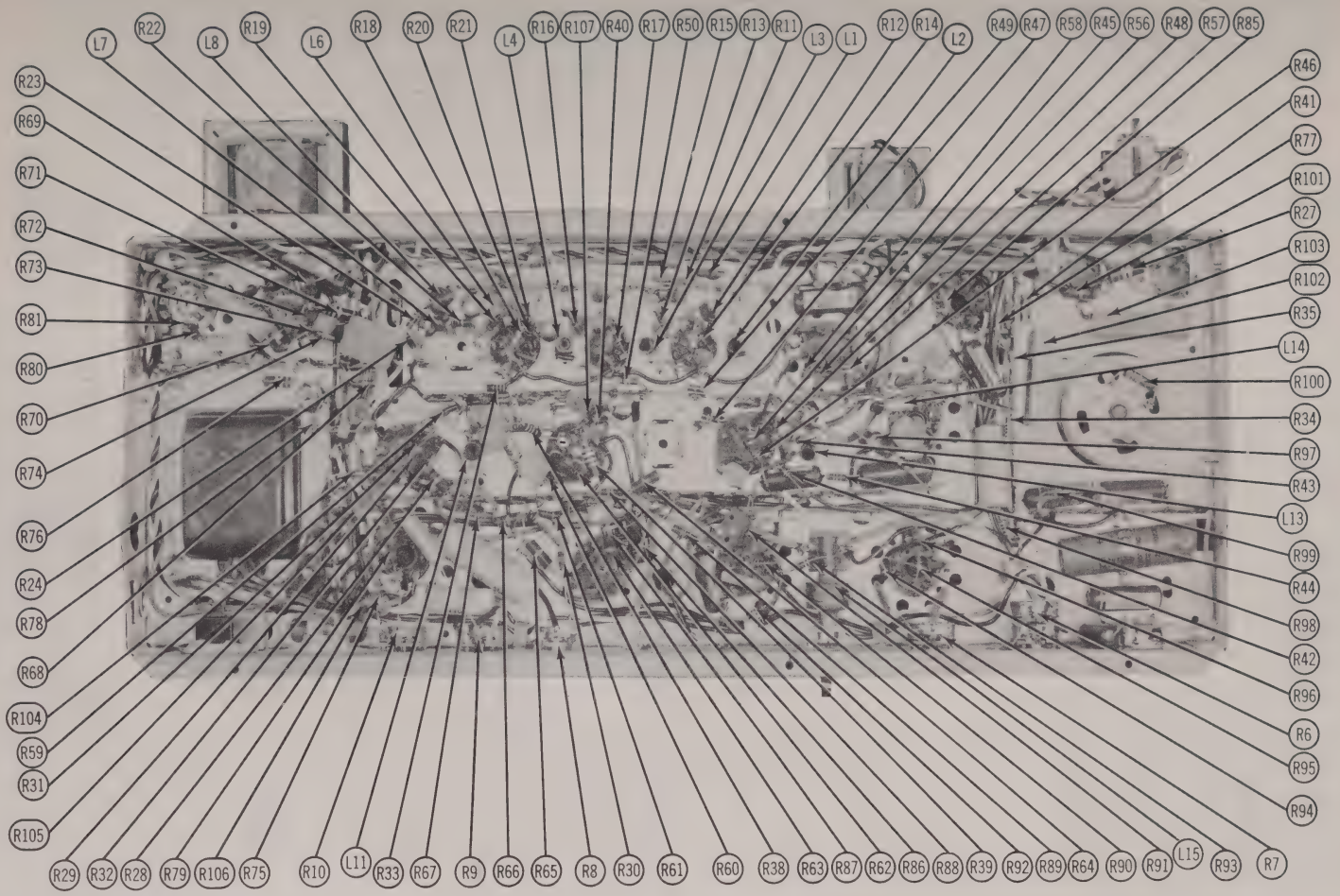


FIG. 1



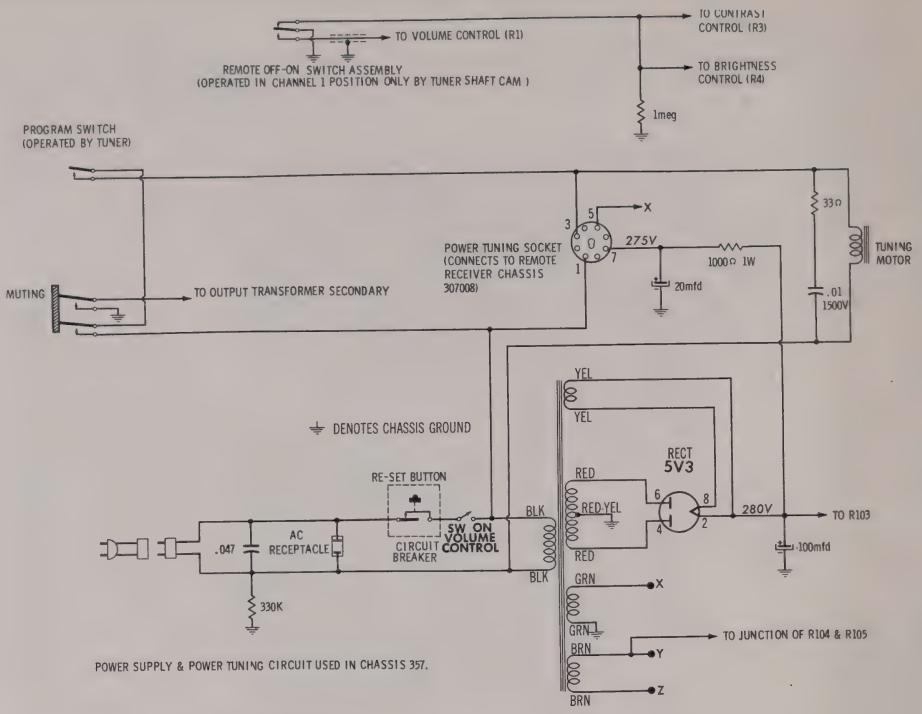
TV CH. BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.

HOFFMAN CHASSIS 357, 359,
307005, 307006, 307007, 307008

FOLDER 1

SET 528 FOLDER 1

PAGE 5



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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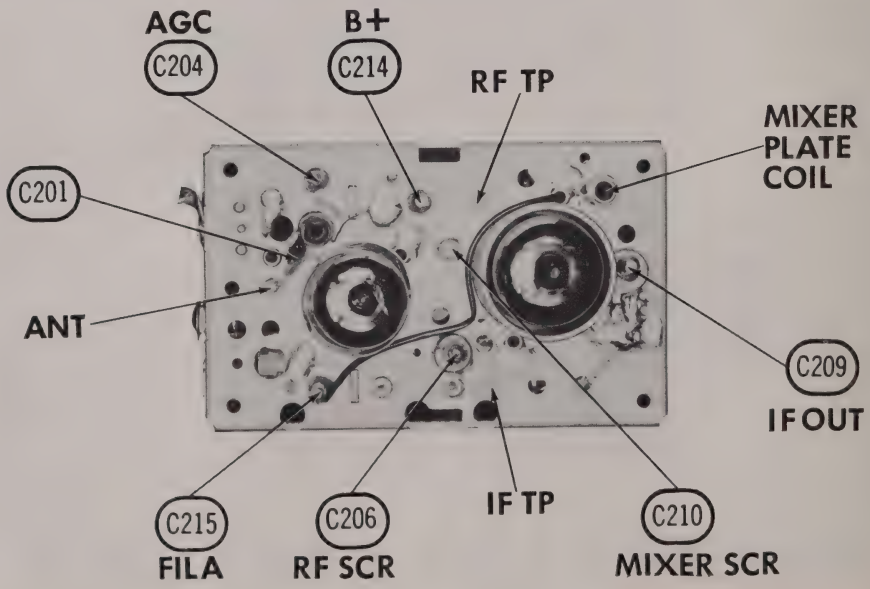
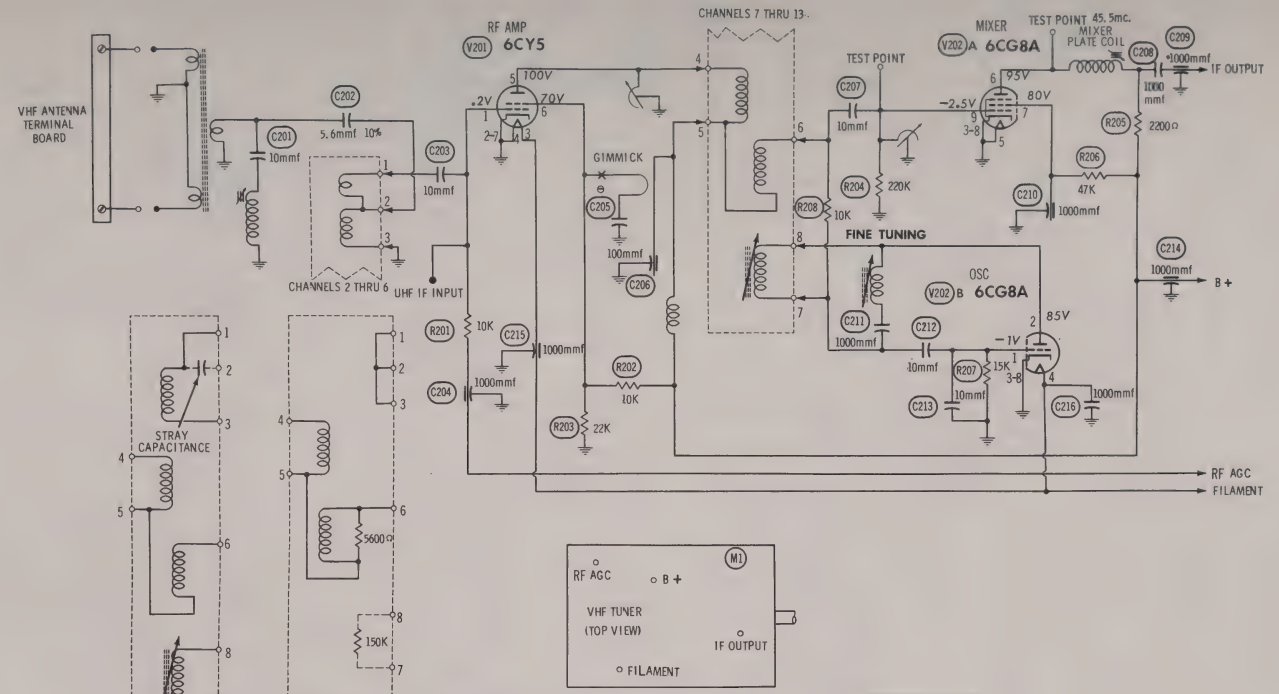
ALTERNATE CIRCUITS



VHF TUNER 714026 - TOP VIEW



PRE-ALIGNMENT INSTRUCTIONS

Suggested Alignment Tools: GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532

VHF OSCILLATOR ALIGNMENT

The individual channel adjustment screws are accessible one at a time thru a hole in the front of the tuner, as the Channel Selector is rotated. Set the Fine Tuning to the center of its range and switch to the channel to be adjusted. Adjust for best picture and sound.

VHF RF AND MIXER ALIGNMENT

This portion of the tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be attempted in the field.

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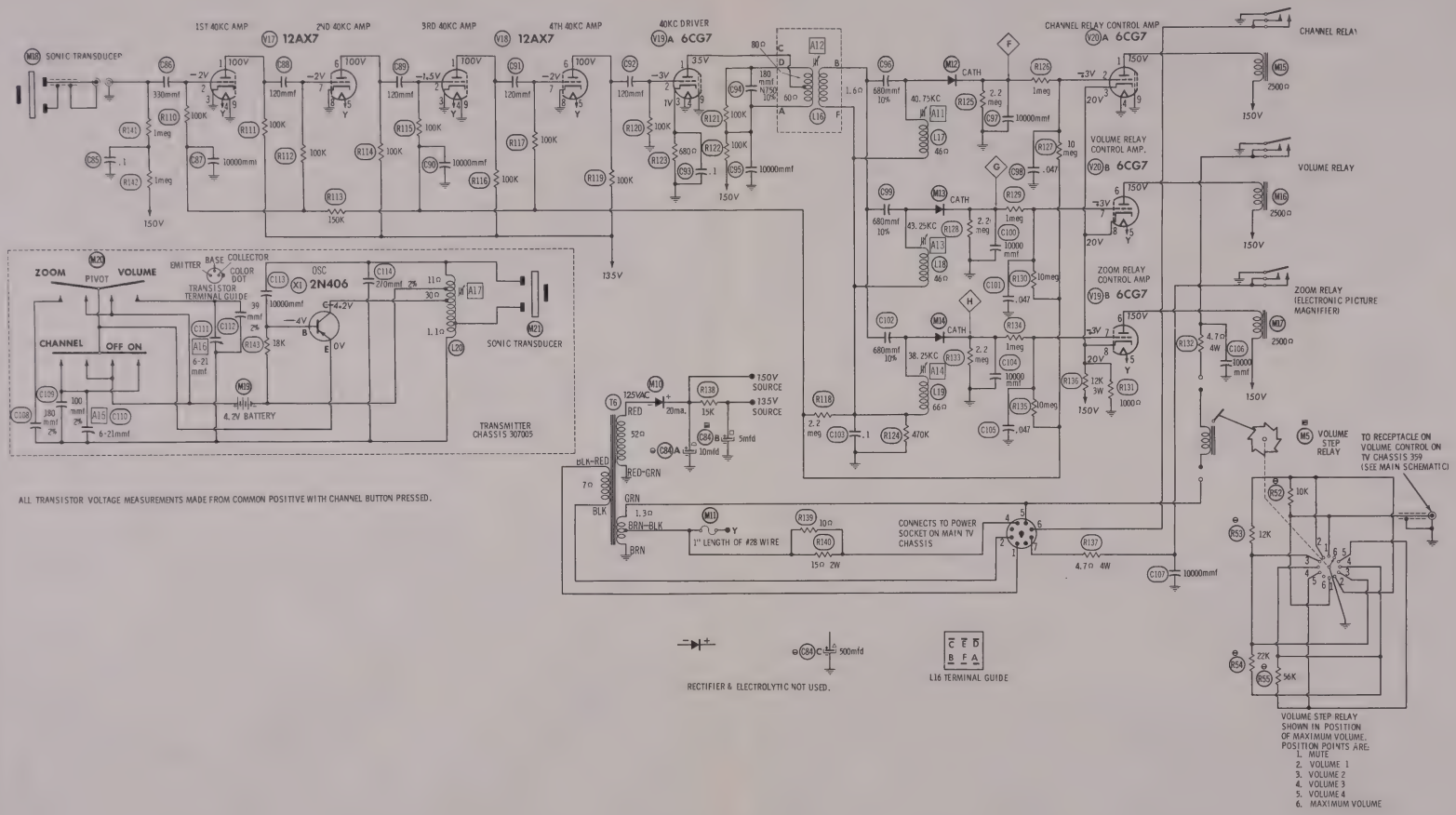
VHF TUNER 714026

HOFFMAN CHASSIS 357, 359, 307005, 307006, 307007, 307008



ALL TRANSISTOR VOLTAGE MEASUREMENTS MADE FROM COMMON POSITIVE WITH CHANNEL BUTTON PRESSED.

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REMOTE CONTROL RECEIVER 307006 & TRANSMITTER 307005

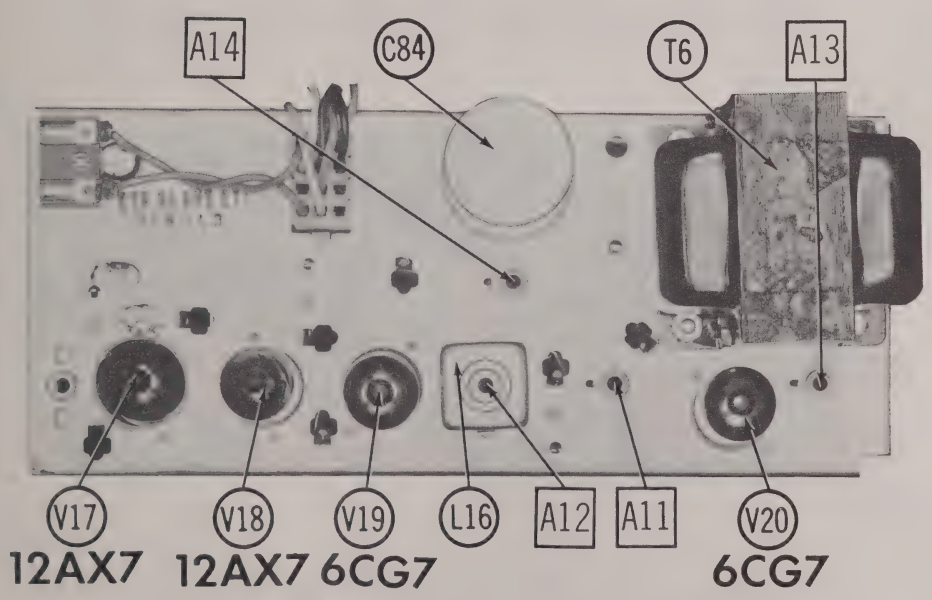
ALIGNMENT INSTRUCTIONS

ALIGNMENT FOR REMOTE CONTROL RECEIVER #307006

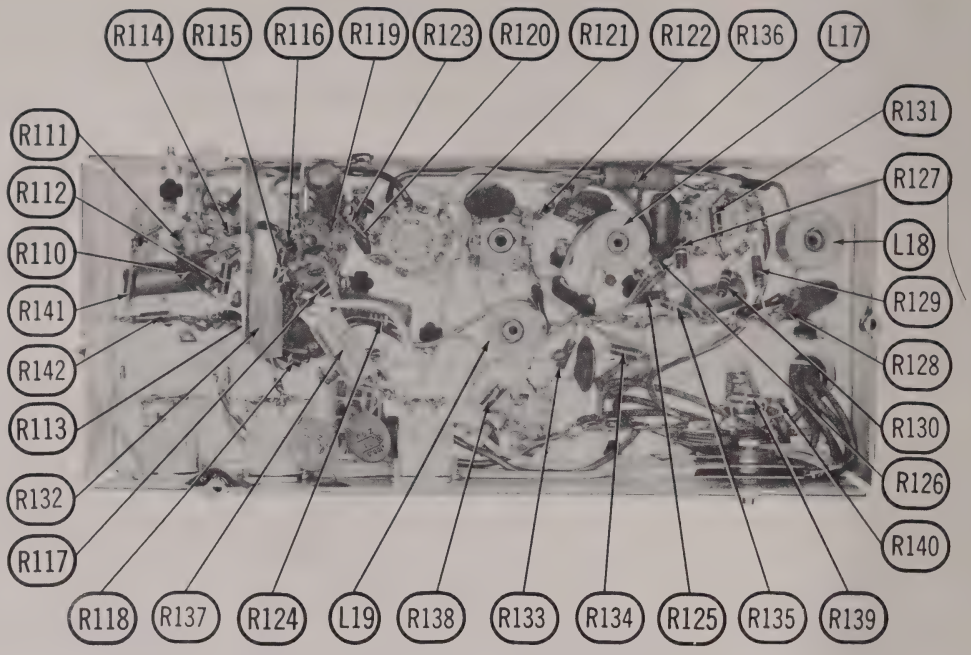
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru 1 meg to pin 2 (grid) of 1st 40KC Amp. Low side to chassis.	40.75KC (Unmod.)	DC probe thru 10 meg to point (F). Common to chassis.	A11, A12	Adjust for maximum deflection.
2.	"	43.25KC	DC probe thru 10 meg to point (G). Common to chassis.	A13	"
3.	"	38.25KC	DC probe thru 10 meg to point (H). Common to chassis.	A14	"

ALIGNMENT FOR REMOTE CONTROL TRANSMITTER #307005

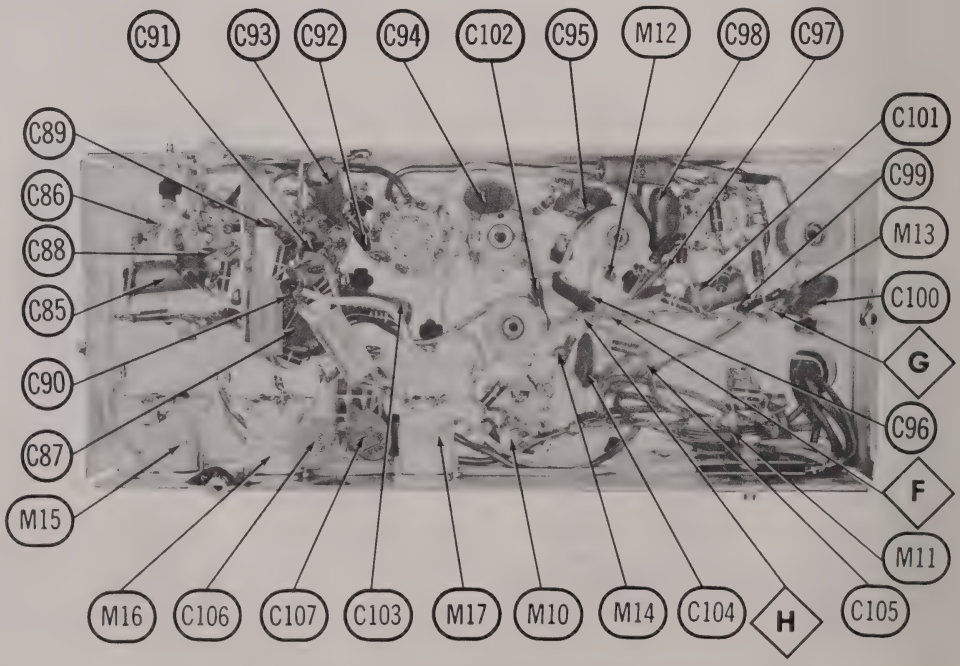
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CONNECT SCOPE	ADJUST	REMARKS
4.	High side to Horizontal Input Terminals of scope. Low side to Ground Terminals. (If available, a second transmitter may be substituted for the generator).	20.375KC (Unmod.)	Vert. Amp. probe of scope placed near Transmitter Output. Low side to negative side of Transmitter Battery.	A15	Depress Channel Button and adjust A15 for zero beat on scope.
5.	"	21.625KC	"	A16	Depress Volume Button and adjust A16 for zero beat on scope.
6.	"	19.125KC	"	A17	Depress Zoom Button and adjust A17 for zero beat on scope.



REMOTE CONTROL RECEIVER 307006 —TOP VIEW



REMOTE CONTROL RECEIVER 307006
BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.



REMOTE CONTROL RECEIVER 307006
BOTTOM VIEW - CAPACITOR & MISC. IDENT.

TV PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE
V1	1st Video IF Amp.	6BZ6
V2	2nd Video IF Amp.	6BZ6
V3	3rd Video IF Amp. - Video Detector	6AM8A
V4	Video Output - AGC Keying	6AW8A
V5	Sound IF Amp. - Sync Sep.	6U8A
V6	Audio Detector	6DT6
V7	Audio Output	6BQ5 (EL84) *
V8	Sync Phase Inv- H. Phase Det	6BJ8
V9	Vert. Mult.	6CG7
V10	Vert. Output	6DT5
V11	Horiz. Mult.	6CG7
V12	Horiz. Output	6DQ6B
V13	Damper	6AX4GTB (6DA4, 6DE4) *
V14	HV Rectifier	1B3GT/1G3GT
V15	LV Rectifier	5V3

* Alternate

PICTURE TUBE

ITEM No.	REPLACEMENT DATA					NOTES
	HOFFMAN PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
V16	23CP4		23CP4 ①		23CP4 ②	① Aluminized ② Silver Screen "85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	HOFFMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲100	350	857104	AFH4-05-60	D0044	FP425.6	TMQ-4310	TVLS-4635.10*	
B	■40	350							
C	▲10	350							
D	10	350							
C2A	▲100	350	856914	AFH4-05-60	D0044	FP425.6	TMT-3444	TVLS-4635.10*	
B	■40	350							
C	▲10	350							
C3	4	600	856002	PRS1845	BRHV604	TC92	TD-8-600	TVA-1962	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REMARKS	REPLACEMENT DATA					
					AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	.1	200V			P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C5	100				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C6	.22	200V			P288N-22		CUB2P22	2DP-4-224	GEM-2022	2TM-P22
C7	4700				BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C8	.47	200V			P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C9	470		10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C10	470		10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C11	100		10%		1469-0001	TCZ-100	22R5T1	CM-19B-101K	MCB235	MS-310
C12	470		10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C13	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C14	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C15	470		10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C16	470		10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C17	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C18	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C19	100		10%		1469-0001	TCZ-100	22R5T1	CM-19B-101K	MCB235	MS-310
C20	470		10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C21	470		10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C22	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C23	2.2		10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C24	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C25	4.7		10%		NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C26	4.7		10%		NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C27	470		10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C28	4700				BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C29	47		10%		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C30	.1	400V			P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C31	4700				BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C32	.047	200V			P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C33	56	3000V	10%						3DY-456	
C34	4700				BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C35	47		10%		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C36	4.7		10%		NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C37	47		10%		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C38	4700				BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C39	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C40	330				DI-330	DD-331	L10T33	CCD-331	B-333	10TS-T33
C41	4700				BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C42	18		10%		DI-18	DD-180	L10Q18	CCD-180	GP418	10TS-Q18
C43	.047	200V			P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C44	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C45	5600				DI-5600	DD-562	DPMS6D56	CCD-562	B-256	10TS-D56
C46	20000				BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C47	.015	200V	10%		V84C2S15-10%		PM4S15	4DP-1-153		4TM-S15
C48	3300				BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C49	.0022	400V			P488N-0022	D6-222	CUB6D22	6DP-1-222	GEM-6222	6TM-D22
C50	220		10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C51	100		10%		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C52	.001	400V	10%	Note 1	V84C4D1-10%	DD-102	PM6D1	6DP-1-102	GEM-1621	6TM-D10
C53	.001	400V	10%		V84C4D1-10%	DD-102	PM6D1	6DP-1-102	GEM-1621	6TM-D10
C54	.001	400V	10%		V84C4D1-10%	DD-102	PM6D1	6DP-1-102	GEM-1621	6TM-D10
C55	.0047	200V			P288N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C56	.1	200V			P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C57	.0033	400V	10%		V84C4D33-10%		CUB6D33	6DP-1-332	GEM-16233	6TM-D33

TV PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING			REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C58	330	N750	10%		N750-DI 330	DTN-330	CN10T33	CCTN-331	CN7-332	10TCU-T22
C59	.047	600V			P683H-047	DD-503	CUB3A47	6DP-3-473	GEM-6147	6TM-S47
C60	.039	400V	10%		P684CM-039		DPM6S39	6DP-3-393	GEM-1614	6PS-S39
C61	.01	600V			P683H-01	DS-103	CUB3S1	6DP-3-103	GEM-611	6TM-P10
C62	.033	600V			P683H-033	DD-303	CUB3S23	6DP-3-333	GEM-6123	6TM-S22
C63	.01	1600V			P684CM-01	DDS6-103	CUB1S3	16DP-3-103	GEM-1611	MB-S10
C64	.33	200V			P283H-22		CUB3P33	2DP-4-334	GEM-2022	2TM-P22
C65	.0039	400V			P684CM-0039	DD-392	DPM6D39	6DP-1-392	GEM-634	6PS-D39
C66	.0047	200V			P283H-0047	DS-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C67	.047	200V			P283H-047	DD-503	CUB2A47	6DP-3-473	GEM-6147	6TM-S47
C68	390		10%		1464-0039		1R5D39	CM-30B-392K	MCE462.5	MB-339
C69	100		10%		1469-0001	TCZ-100	22R5T1	CM-19B-101K	MCB235	MB-31
C70	470		10%		1469-00047		5R5T47	CM-19B-471K	MCJ344	MB-347
C71	330		10%		1469-00033		5R5T33	CM-19B-331K	MCB341	MB-330
C72	220		10%		DI-220	DD-221	L20T22	CCD-221	GP323	10TS-T22
C73	.1	400V			P683H-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C74	.1	600V			P683H-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C75	47	4000V	10%	#650306					83Y-447	
C76	4700				BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C77	.1	400V			P683H-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C78	.039	600V	10%	Note 2	P684CM-039		DPM6K39	6DP-3-393	GEM-1614	6PS-S39
C79	.068	600V	10%		V84C4S68-10%		DPM6S68	6DP-3-683		6TM-S68
C80	.039	600V	10%		P684CM-039		DPM6S39	6DP-3-393	GEM-1614	6PS-S39
C81	.047	600V			P683H-047	DD-503	CUB6S47	6DP-3-473	GEM-6347	6TM-S47
C82	10000	1500V		Note 1	DAC-27	DDS6-103	HVR1S3	16DP-3-103	UAC-110	BL-S10
C83	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

Hoffman Part Number.

Note 1. May not be used in some versions.
Note 2. Not used in Chassis 357.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HOFFMAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	800078	BPL-01		B1S-133X	PP55T254	Volume
	220K Tap							
B	Switch			Not Req.		SK7	Not Req.	Push-Pull Off-On
R2A	1meg	½	800081	B-79	A47-1meg-Z	QJ1-137	153	Tone
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	300Ω	½	800076	B-3		B11-102		Contrast
B	Shaft			Not Req.		SK6	Not Req.	
R4A	150K	½	800079	B-43	A47-150K-S	QU1-328	RU154L	Brightness
B	Shaft			Not Req.	FS-3	Not Req.	SL3500	
C	Bushing			Not Req.	Not Req.	Not Req.	SL38	
R5A	1. 5meg	½	800088	B-743	A47-1.5meg-S	Q11-138	U155	Vert. Hold
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R6A	1meg	½	803069	F1-83		†(Q1-1356	■(UE4308	Focus
B	750Ω	½		R2-4			TA1S3L	Buzz
R7A	15K	½	800094	AB-20	A47-15K-S	B11-119		Horiz. Drive
B	Shaft			AK-1	FK3-½	TM4	Not Req.	
R8A	100K	½	800038	TT-40	B47-100K-S	B11-128	PTA15L	AGC
B	Shaft			Not Req.		TM4	Not Req.	
R9A	1meg	½	800039	TT-39	B47-1meg-S	B11-137	PTA1254L	Height
B	Shaft			Not Req.		TM4	Not Req.	
R10A	1meg	½	800039	TT-39	B47-1meg-S	B11-137	PTA1254L	Vert. Linearity
B	Shaft			Not Req.		TM4	Not Req.	

† "CONCENTRIKIT" Equivalent: K-5 Kit with Base Elements and Shafts: B11-240, P9-021 (Panel)
(Not available as a factory assembled unit). B11-105, R15-005 (Rear)
■ "ETA-LOC" Equivalent: FA481, R1781L, Q3825, 1K325.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R1	470Ω			
R2	22K			
R3	2200Ω			
R4	47Ω			
R5	470Ω			Note 1
R6	2200Ω			Note 1
R7	47Ω			Note 1
R8	15K			Note 1
R9	1000Ω			
R20	22K			
R21	150Ω			
R22	33K			
R23	4700Ω			
R24	10K			
R25	47000 4W	PW5-4700	5W-5Ω-4700	#818493
R26	39K			
R27	22K 2W			
R28	10000 1W			
R29	470K			
R30	15K			
R31	470K			
R32	2. 7meg			
R33	47K			
R34	470K			
R35	22K			
R36	220K			
R37	820K			
R38	47K			
R39	39K 1W			
R40	10K		(12K) *	Note 1
R41	10000 1W			
R42	820K			
R43	100K			
R44	560K			
R45	3300Ω			
R46	330Ω			
R47	10K			

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R48	33K			
R49	4. 7meg			
R50	150K			
R51	33K			
R52	10K			
R53	12K			
R54	22K			
R55	15K			
R56	1000Ω			
R57	22K 1W			
R58	220Ω			
R59	270Ω			
R60	330K			
R61	2. 2meg			
R62	120K			
R63	2200Ω 1W			
R64	2200Ω 1W			
R65	2200Ω 1W			
R66	1800Ω 1W			
R67	470Ω			
R68	220K			
R69	68K 1W			
R70	470Ω			
R71	680K 1W			
R72	27K 1W			
R73	1. 5meg			
R74	330K			
R75	680K			
R76	47K 1W			
R77	1. 5meg .			
R78	33K			
R79	1. 2meg			
R80	100Ω			
R81	330Ω			
R82	220Ω			
R83	220Ω			
R84	3Ω (Cold)			

TV PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R85	4700Ω			
R86	100K			
R87	100K			
R88	220K			
R89	470K			
R90	6800Ω			
R91	1500Ω			
R92	100K			
R93	120K			
R94	100Ω			Note 2
R95	1meg			
R96	100Ω			Note 2
R97	10K 2W			

* Alternate Value.
# Hoffman Part Number

Note 1. Not used in Chassis 357.
Note 2. May not be used in some versions.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R98	47K			
R99	15K			
R100	2. 2Ω 1W			
R101	1000Ω 1W			
R102	2500Ω 10W	PW10-2500	10W-5Ω-2500	#825444
R103	120Ω 15W	PW15-120	15W-5Ω-120	#828006
R104	1meg			
R105	1. 5meg			
R106	330K			
R107	5600Ω			
R108	33Ω			
R109	25Ω 1W			

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	HOFFMAN PART No.	REPLACEMENT DATA	
K1	Vert. Integrator	2200mmf, 4700mmf, 4700mmf, 8200Ω, 8200Ω, 22K	936001	Aerovox Centralab Sprague	PA-100 PC-100 V-1/V-3

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: HOFFMAN PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workmen TV PART No.	NOTES
L1	RF Choke (27uh)	750004					① IRC Part #CLA.
L2A	1st Video IF	762031	TV-134				
B	47. 25MC Trap						
L3	2nd Video IF	762017	TV-130	6219	RTC-8551	T217	
L4A	3rd Video IF	762032		6222	RTC-8553	T225	
B	47. 25MC Trap						
L5	4th Video IF	760019	TV-126	6234	RTC-8563	T211	
L6	RF Choke (6. 8uh)	750014 ①	BC-545	4610	RTC-8520	T259	
L7	Peaking (100uh)	T71008	TV-181	6112	RTC-8574	T305	
L8	Peaking (820uh)	T71019	TV-207	6156	RTC-8588	T326	
L9	4. 5MC Trap	762005	TV-151	1469	RTC-8602	T249	
L10	Peaking (220uh)	T71013	TV-197	6154	RTC-8586	T312	
L11	1st Sound IF	762006	TV-151	1469	RTC-8602	T249	
L12	2nd Sound IF	760003	TV-113	6203	RTC-8545	T235	
L13	Quadrature	T74001	TV-128	1480	RTC-8605	T251	
L14	RF Choke (1. 5uh)	750015 ①	BC-562	4604	RTC-8516	T256	

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: HOFFMAN PART No.	Merit PART No.	Miller PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	Workmen TV PART No.
L15	Horiz. Stabilizer (Freq.)	T68020	TV-183	6211	RC110	RTC-8622	H3-5	WLC-25	T103

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	SEC. 3	SEC. 4	SEC. 5	REPLACEMENT DATA: HOFFMAN PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V @ 1. 8A	540 VCT @ . 280A DC	5V @ 3. 8A				T16033				R-87BC	
	SEC. 3		SEC. 4		SEC. 5							
	6. 3V @ . 45A		6. 3V @ 8. 8A									

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: HOFFMAN PART No.	Merit PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	Vert. Output	T28010-2						
T3	Alt. Vert. Output Yoke (Horiz. 18MH) (10th) (Vert. 15MH)	T28010 T90014		PCM-2017 ①②	DY-27A ①③	Y-48 ①②	Y-60-1 ①③	
	Rear Convergence and Centering Device							
T4	Horiz. Output	T62012						

① Remove Horizontal Damping Network. Connect same as original.
② Use original Rear Cover and Centering Device.
③ Remove 470Ω Resistor across Vertical Windings.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: HOFFMAN PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	5800Ω	3-4Ω	T24039	A-3019	A-8092	26S49	S-5Z	

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP	REPLACEMENT DATA: HOFFMAN PART No.	QUAM PART No.	NOTES
SP1	8"	PM	6-8Ω	708607 ①	8A21PA	① Used in Models MR3853, SPR3853, WR3853.
SP2	8"	PM	6-8Ω	708607 ①	8A21PA	① Used in Models KR3843, WR3843,
	4" x 6"	PM		708911 ②		BR3833, MR3833, SPR3833, WR3833.
	6"	PM	6-8Ω	708605 ③	6A1528.4	② Used in Model BR3823, MR3823, WR3823.
	4" x 6"	PM		708912 ④		③ Used in Models BR3815, MR3815, SPR3815, WR3815.
						④ Used in Model BR3813.

MISCELLANEOUS

ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
M1	Tuner	714026 *	VHF
M2	Motor Switch	715010	Assembly, Includes Muting, Remote Off-On Defeat, and Pre-Selector Deactivate Switches (Chassis 359)
	Motor Switch	715011	Assembly, Includes Muting, Remote Off-On Defeat, and Pre-Selector Deactivate Switches (Chassis 357)
M3	Switch	900041	Remote Off-On (Chassis 359)
	Switch	900013	Stand-By Off (Chassis 357)
M4	Relay	998005	Zoom (Picture Magnifier), Chassis 359
M5	Relay	998006	Volume (Chassis 359)
M6	Switch	903643	Width (Horiz. Size)
M7	Circuit Breaker	953001	
M8	Lite Scope	978004	Assembly
M9	Horizontal Linearity Sleeve		

* Complete Tuner Assembly #710025 includes Tuner #714026 (with Pre-Set Function Assembly) and Fine Tuning Shaft (with Gear) #714025.

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8534 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8486 (Round) - 8 Conductor

REMOTE CONTROL RECEIVER 307006 PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	• GENERAL ELECTRIC • USE	TYPE	ITEM No.	• RAYTHEON • SYLVANIA • USE	TYPE
V17	1st-2nd 40KC Amp.	12AX7	V19	40KC Driver-Zoom (Electronic Picture Magnifier) Relay Control Amp.	6CQ7
V18	3rd 40KC Amp.- 4th 40KC Amp.	12AX7	V20	Channel Selector-Volume Relay Control Amp.	6CQ7

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	VOLT.	REPLACEMENT DATA: HOFFMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C84A	≤10	200	Note 1	AFH3-84-15			TMH-1160 TDLD-17	TVL8-3466.5 *	
B	≤5	200							
C	≤500	50							

Note 1. C84C (500mfd @ 50V) not used. Some versions may use 2 section for C84A & B (Pt. #658918, 10mfd @ 200V and 5mfd @ 200V).

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C85	.1	200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-301	2TM-P10
C86	330			DI-330	DD-331	L10T33	CCD-331	B-333	10TS-T33
C87	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C88	120			DI-120	DD-121	L10T12	CCD-121	GP312	10TS-T12
C89	120			DI-120	DD-121	L10T12	CCD-121	GP312	10TS-T12
C90	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C91	120			DI-120	DD-121	L10T12	CCD-121	GP312	10TS-T12
C92	120			DI-120	DD-121	L10T12	CCD-121	GP312	10TS-T12
C93	.1	200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-301	2TM-P10
C94	180	N750	10%	N750-DI 180	TCN-180	CUBTBU		CNT-318	10TCU-T18
C95	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C96	680		10%	1469-00068		5R5T68	CM-19B-681K	MCJ349	MB-368
C97	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C98	.047	200V		P288N-047	DD-503	CUB2A47	4DP-3-473	GEM-4147	2TM-S47
C99	680		10%	1469-00068		5R5T68	CM-19B-681K	MCJ349	MB-368
C100	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C101	.047	200V		P288N-047	DD-503	CUB2A47	4DP-3-473	GEM-4147	2TM-S47
C102	680		10%	1469-00068		5R5T68	CM-19B-681K	MCJ349	MB-368
C103	.1	200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-301	2TM-P10
C104	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C105	.047	200V		P288N-047	DD-503	CUB2A47	4DP-3-473	GEM-4147	2TM-S47
C106	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C107	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

HOFFMAN CHASSIS 357, 359, 307005, 307006, 307007, 307008

FOLDER 1

REMOTE CONTROL RECEIVER

307006

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R110	100K				R127	10meg			
R111	100K				R128	2.2meg			
R112	100K				R129	1meg			
R113	150K				R130	10meg			
R114	100K				R131	1000Ω			
R115	100K				R132	4.7Ω 4W	PW5-4.7	5W-SQ-4.7	
R116	100K				R133	2.2meg			
R117	100K				R134	1meg			
R118	2.2meg				R135	10meg			
R119	100K				R136	12K 3W	PW3-12K	3G-12K	#814205
R120	100K				R137	4.7Ω 4W	PW5-4.7	5W-SQ-4.7	
R121	100K				R138	15K			
R122	100K				R139	10Ω			
R123	680Ω				R140	15Ω 2W			
R124	470K				R141	1meg			
R125	2.2meg				R142	1meg			
R126	1meg								

Hoffman Part Number.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		HOFFMAN PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L16	40KC Trans.	760026					
L17	40.75KC	762033					
L18	43.25KC	762033					
L19	38.25KC	762034					

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	HOFFMAN PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T6	117V @ .65A	125V @ .020A DC	24V @ 1.9A Tap @ 6.3V @ 2A	716038					

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	HOFFMAN PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M10	.020A	746003	1N1763	40H	SR500	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			HOFFMAN PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M11	1" length of #28 wire							

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		HOFFMAN PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M12		744007				Selenium
M13		744007				
M14		744007				

MISCELLANEOUS

ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
M15	Relay	998007	Channel Selector
M16	Relay	998007	Volume
M17	Relay	998007	Zoom (Picture Magnifier)
M18	Sonic Transducer	976006	

REMOTE CONTROL TRANSMITTER
307005

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N406	Osc.	2N406	2N362	2N406	PNP

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C108	180 2%	#851151				CM-15-E-181G		
C109	100 2%			TCZ-100		CM-15-E-101G	MCE235	
C110	6-21							
C111	6-21							
C112	39 2%			TCZ-39		CM-15-E-390G	MCE223	
C113	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C114	270 2%	#851116				CM-15-F-271G		

Hoffman Part Number.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R143	18K								

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		HOFFMAN PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L20	Osc.						

BATTERIES

ITEM No.	VOLTAGE	HOFFMAN PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M19	4.2V					E-163		TR-163	

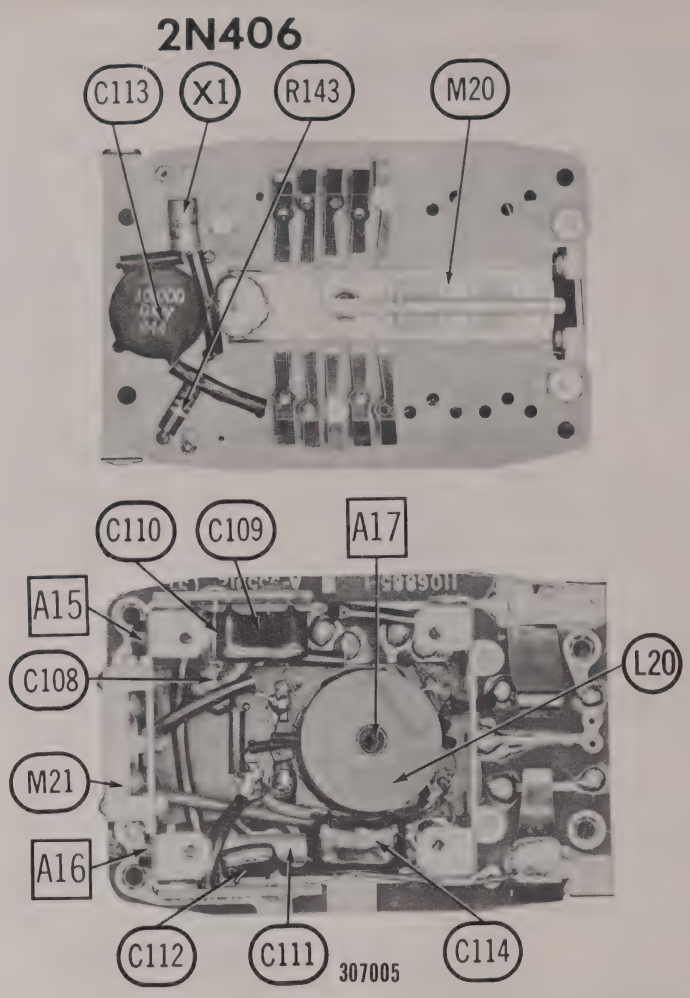
MISCELLANEOUS

ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
M20 M21	Switch Assembly Sonic Transducer		Volume, Channel Selector, Zoom (Picture Magnifier)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

DESCRIPTION	PART NO.	MODEL NO. WR3813	MR3813	BR3813	SPR3813	WR3823	MR3823	BR3823	WR3833	MR3833	BR3833	SPR3833	KR3843	WR3843	WR3853	MR3853	SPR3853
Mask & Bezel	406014	X		X		X		X									
Mask & Bezel	406019									X		X	X	X	X	X	X
Mask & Bezel	406013								X		X						
Mask & Bezel	406020		X		X		X										
Knob-VHF Channel Selector	480072	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Knob- Fine Tuning, Volume, Contrast	508021	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Knob- Brightness, Vertical Hold, Tone	508021	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Cabinet	354094												X				
Cabinet	354083	X															
Cabinet	352080					X											
Cabinet	354095								X								
Cabinet	354091													X			
Cabinet	354090														X		
Cabinet	354084		X														
Cabinet	352081						X										
Cabinet	354087									X							
Cabinet	354092															X	
Cabinet	354085			X													
Cabinet	352082							X									
Cabinet	354088										X						
Cabinet	354086				X												
Cabinet	354089											X					
Cabinet	354093																X



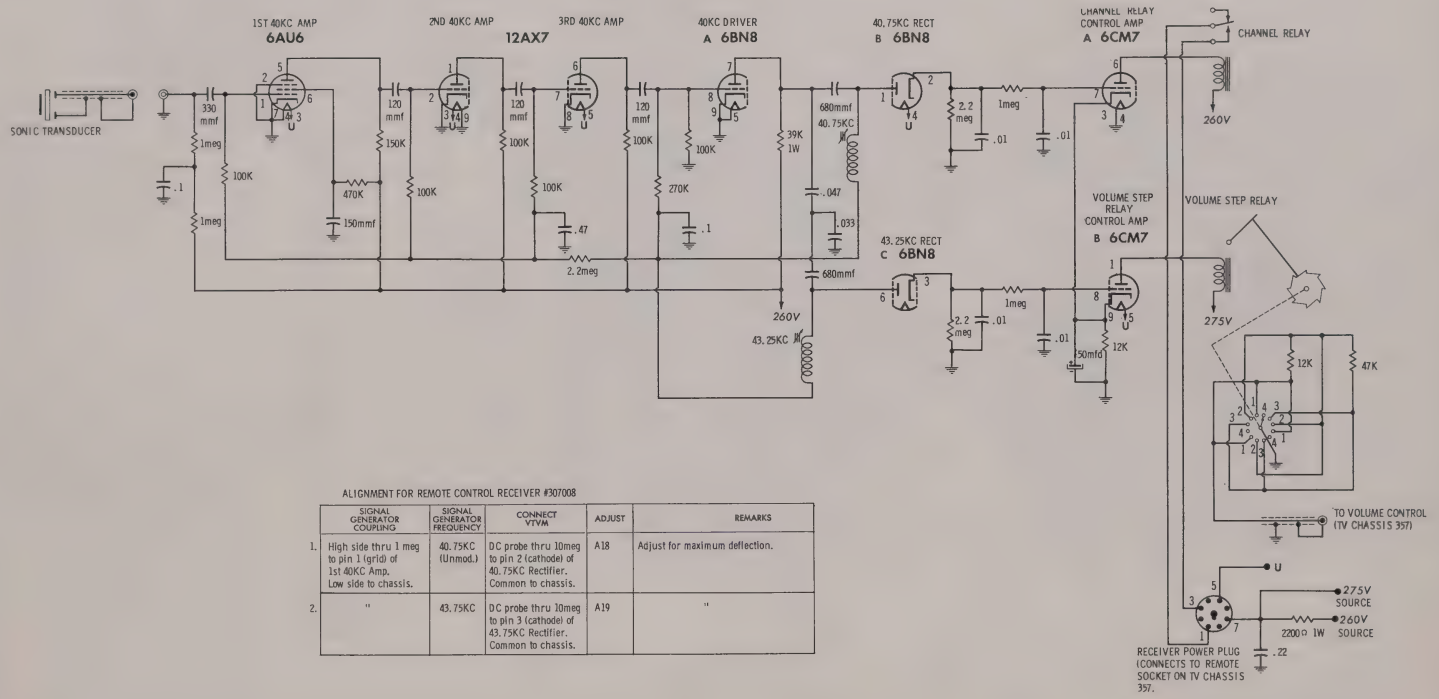
REMOTE CONTROL TRANSMITTER

RESISTANCE MEASUREMENTS

REMOTE CONTROL RECEIVER 307006

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V17	12AX7	††115K	2.8meg	0Ω	.1Ω	.1Ω	††115K	2.8meg	0Ω	0Ω
V18	12AX7	††115K	2.5meg	0Ω	.1Ω	.1Ω	††115K	2.5meg	0Ω	0Ω
V19	6CG7	††100K	100K	680Ω	0Ω	.1Ω	††2500Ω	3meg	1000Ω	0Ω
V20	6CG7	††2500Ω	3meg	1000Ω	0Ω	.1Ω	††2500Ω	3meg	1000Ω	0Ω

RESISTANCE MEASUREMENTS FOR X1 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.
†† MEASURED FROM OUTPUT OF M10.



ALIGNMENT FOR REMOTE CONTROL RECEIVER #307008

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru 1 meg to pin 1 (grid) of 1st 40KC Amp. Low side to chassis.	40.75KC (Unmod.)	DC probe thru 10meg to pin 2 (cathode) of 40.75KC Rectifier. Common to chassis.	A18	Adjust for maximum deflection.
2.	"	43.75KC	DC probe thru 10meg to pin 3 (cathode) of 43.75KC Rectifier. Common to chassis.	A19	"

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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REMOTE CONTROL RECEIVER 307008

VHF TUNER PARTS LIST AND DESCRIPTIONS

714026

TUBES

• GENERAL ELECTRIC •			• RAYTHEON •			• SYLVANIA •		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amplifier	6CY5	V202	Mixer - Osc.	6CG8A			

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	10		DI-10	DD-100	L10Q1	CCD-100	GP410	10TS-Q10
C202	5.6 10%							10TCC-V56
C203	10		DI-10	DD-100	L10Q1	CCD-100	GP410	10TS-Q10
C204	1000		EF-001	MFT-1000		CCF-102	CT280A	
C205		Note 1						
C206	100		EF-0001	MFT-100				
C207	10		DI-10	DD-100	L10Q1	CCD-100	GP410	10TS-Q10
C208	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C209	1000		EF-001	MFT-1000		CCF-102	CT280A	
C210	1000		EF-001	MFT-1000		CCF-102	CT280A	
C211	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C212	10		DI-10	DD-100	L10Q1	CCD-100	GP410	10TS-Q10
C213	10		DI-10	DD-100	L10Q1	CCD-100	GP410	10TS-Q10
C214	1000		EF-001	MFT-1000		CCF-102	CT280A	
C215	1000		EF-001	MFT-1000		CCF-102	CT280A	
C216	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10

Note 1. May not be used in some versions.

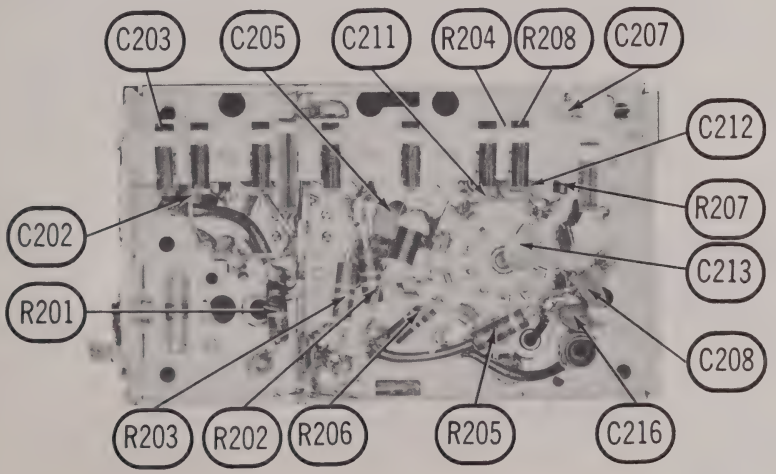
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

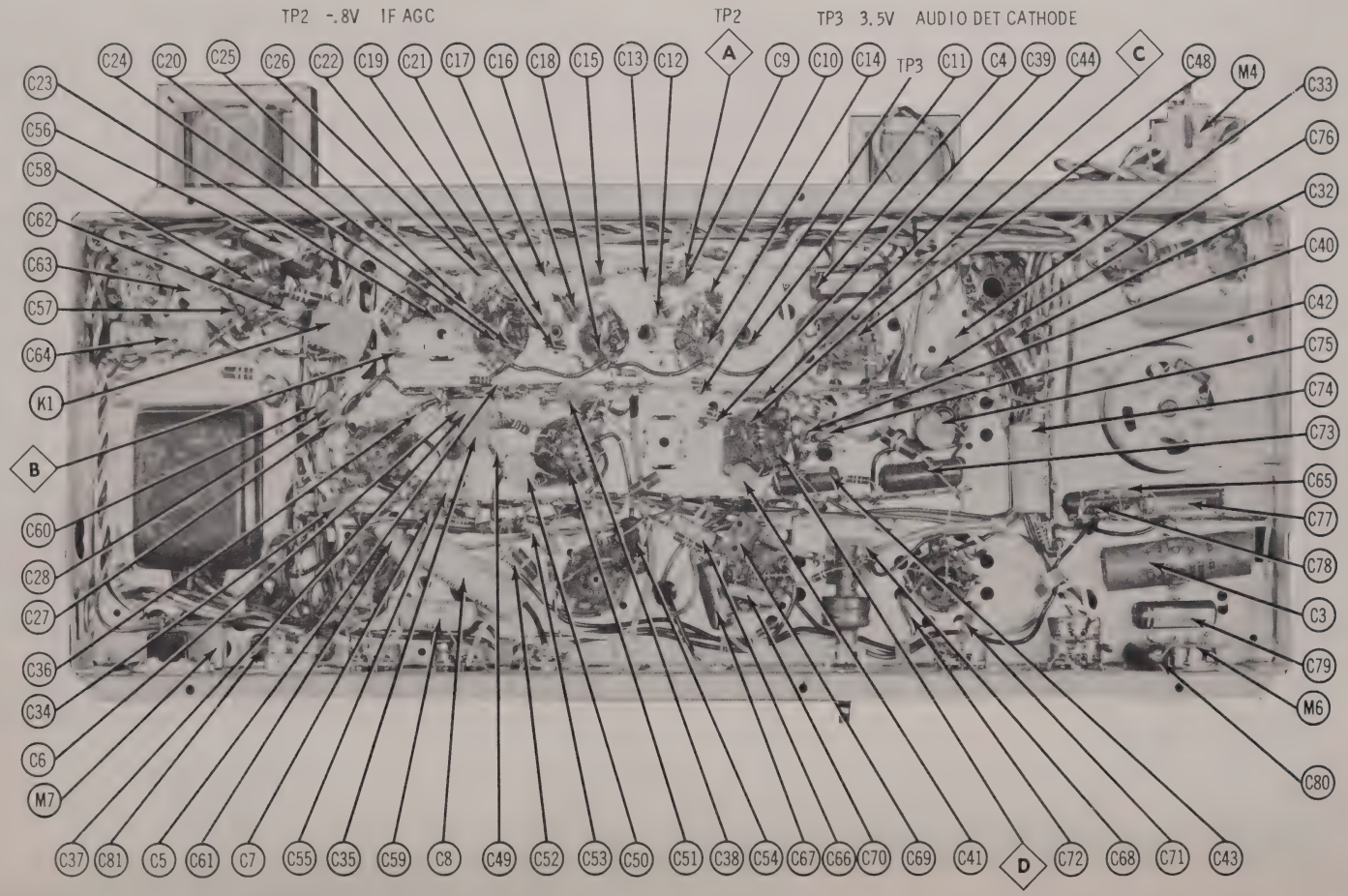
ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R201	10K				R205	2200Ω			
R202	10K				R206	47K			
R203	22K				R207	15K			
R204	220K				R208	10K			

MISCELLANEOUS

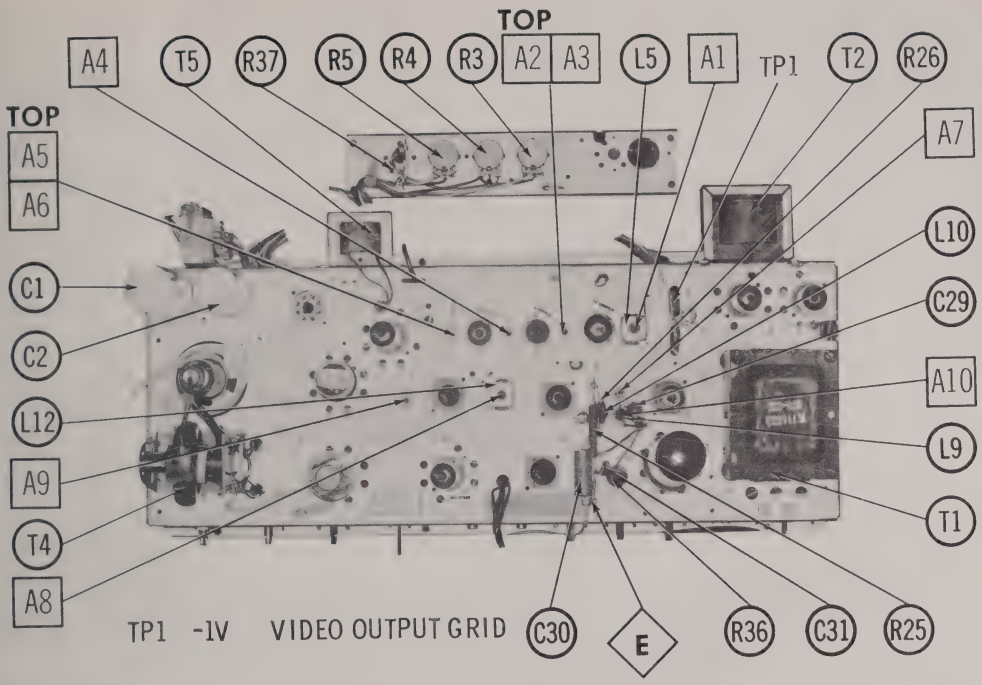
ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
	Fine Tuning Shaft and Gear	714025	



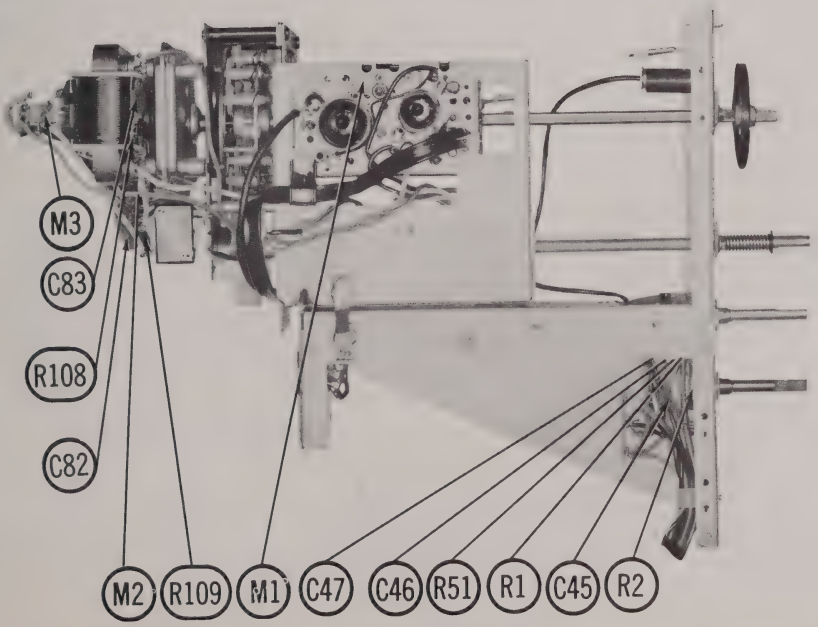
VHF TUNER 714026 – BOTTOM VIEW



TV CH. BOTTOM VIEW - CAPACITOR, MISC., ALIGN. IDENT.

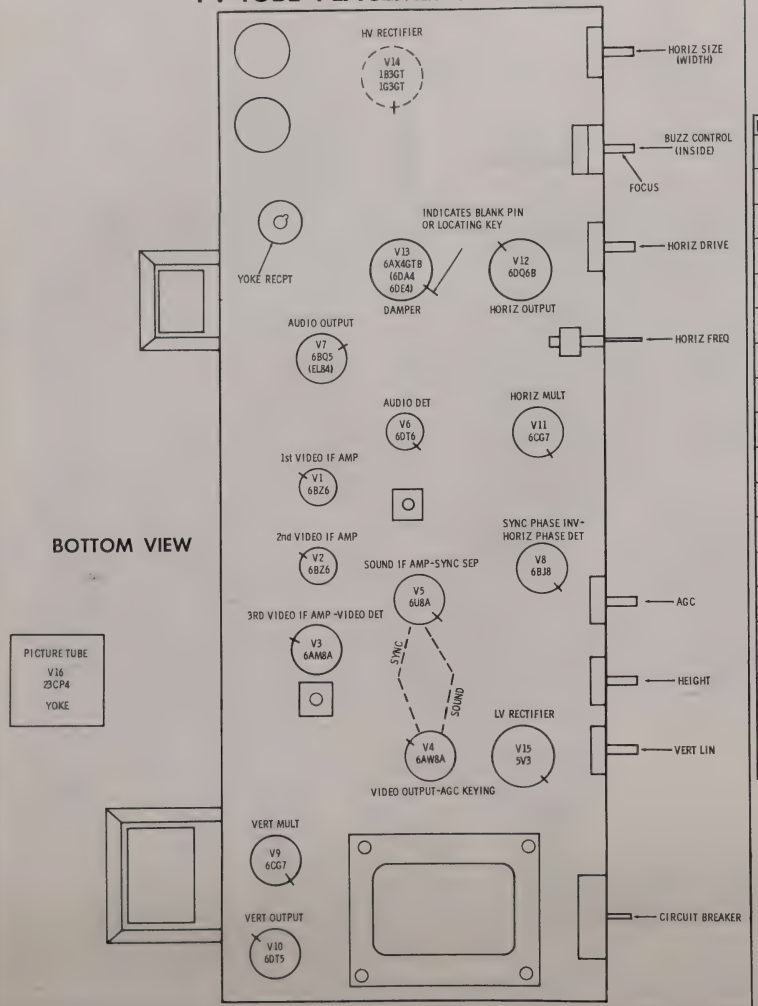


TV CHASSIS - TOP VIEW



POWER TUNING & CONTROL PANEL USED IN TV CH. 359

TV TUBE PLACEMENT CHART



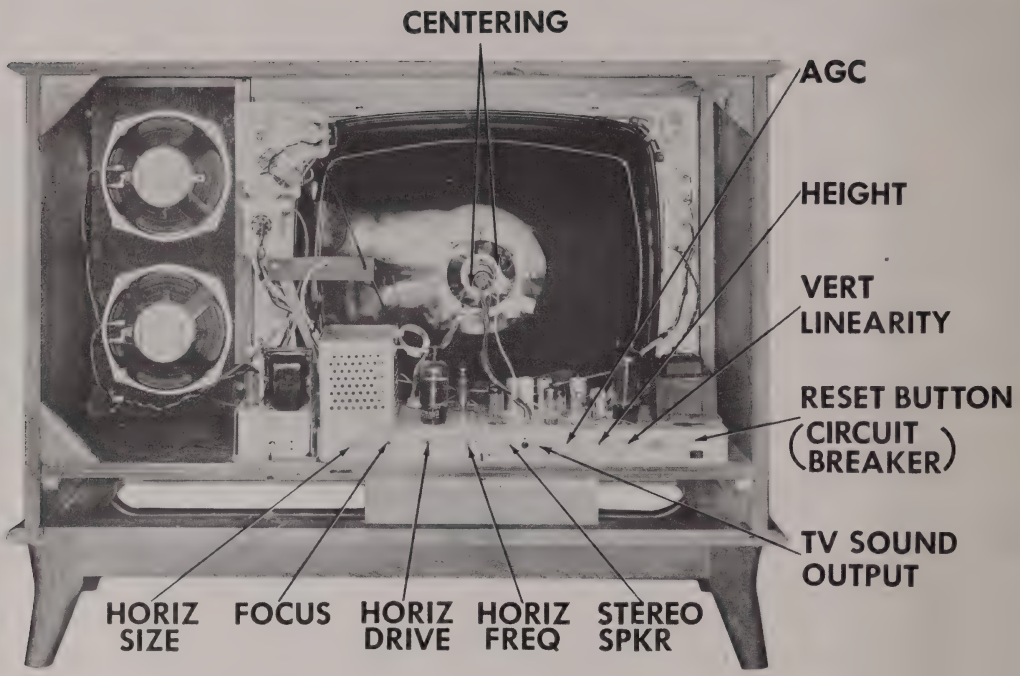
TV RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	• 65K	47Ω	.1Ω	0Ω	†4800Ω	†4800Ω	0Ω		
V2	6BZ6	• 65K	47Ω	.1Ω	0Ω	†4800Ω	†4800Ω	0Ω		
V3	6AM8A	150Ω	.1Ω	†24K	.1Ω	0Ω	†1100Ω	.1Ω	4700Ω	0Ω
V4	6AW8A	†120Ω	†1100Ω	• 500K	600K	600K	• 60Ω	4700Ω	†22K	†5800Ω
V5	6U8A	†120K	47K	†20K	0Ω	.1Ω	†20K	0Ω	0Ω	2.5meg
V6	6DT6	5Ω	• 1000Ω	.1Ω	0Ω	‡870Ω	†5900Ω	560K		
V7	6BQ5	• 10K	NC	220Ω	0Ω	.1Ω	NC	†445Ω	NC	†22K
V8	6BJ8	15K	320K	15K	0Ω	.1Ω	320K	†4500Ω	†120K	4500Ω
V9	6CG7	†68K	260K	1000Ω	0Ω	.1Ω	‡550K	•3meg	1000Ω	0Ω
V10	6DT5	†2100Ω	NC	• 2.2meg	0Ω	.1Ω	NC	0Ω	NC	†420Ω
V11	6CG7	†8000Ω	690K	1500Ω	0Ω	.1Ω	†120K	100K	1500Ω	0Ω
V12	6DQ6B	NC	0Ω	NC	†10K	1meg	TP	.1Ω	0Ω	TOP CAP ‡17Ω
V13	6AX4GTB	NC	NC	INF ▲500K	NC	†120Ω	NC	.1Ω	0Ω	
V14	1B3GT 1G3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡370Ω
V15	5V3	NC	¶ 20K	NC	21Ω	NC	22Ω	TP	¶ 20K	
V16	Z3CP4	.1Ω	22K	‡47K	• ‡200K	NC	NC	•1.1meg	0Ω	
V201	6CY5	800K	0Ω	0Ω	.1Ω	†3600Ω	†11K	0Ω		
V202	6CG8A	15K	†13K	0Ω	.1Ω	0Ω	†5800Ω	†50K	0Ω	220K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM PIN 8 OF V15.
‡ MEASURED FROM PIN 3 OF V13.
▲ MEASURED WITH RASTER ENLARGED (ZOOM POSITION).

NC NO CONNECTION
TP TIE POINT

ALL MEASUREMENTS MADE WITH NORMAL SIZE RASTER UNLESS OTHERWISE DESIGNATED.



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

1. Turn the set on and tune in a TV station preferably with a test pattern.
2. Set the Brightness and Contrast Controls for a normal picture.
3. Turn the Horizontal Hold (Horiz. Freq.) clockwise until the picture loses sync. It may be necessary to switch off channel and back again for picture to lose sync.
4. Turn the Horizontal Hold slowly counterclockwise until the picture just falls into sync.
5. Turn to an unused channel. If vertical lines appear near the center of the screen, slowly adjust the Horizontal Drive Control until white lines disappear.
6. If in step 5 the Horizontal Drive was adjusted, tune in a TV station and repeat steps 3 and 4. Check horizontal sync by switching off channel and back again.

DISASSEMBLY INSTRUCTIONS

CHASSIS AND PICTURE TUBE ASSEMBLY REMOVAL

1. Remove 10 wood screws holding rear cover.
2. Remove rear cover.
3. Disconnect speaker leads.
4. Remove 2 shipping bolts and 2 chassis bolts from bottom of cabinet.
5. Loosen 4 screws holding clamps to front frame (inside cabinet).
6. Remove chassis and picture tube out front.

PHOTOFACT® Folder with CIRCUITRACE®

ZENITH CHASSIS 16E24Q, 16F24Q, 3F21, 7F32, 9F27, S-48563, S-50384

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

ZENITH CHASSIS 16E24Q, 16F24Q, 3F21, 7F32, 9F27, S-48563, S-50384

MODEL F3344E (TV CH. 16E24Q)

ZENITH CHASSIS 16E24Q, 16F24Q, 3F21, 7F32, 9F27, S-48563, S-50384

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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DATE 4-61 SET 528 FOLDER 2

SET 528 FOLDER 2

ZENITH CHASSIS 16E24Q, 16F24Q, 3F21, 7F32, 9F27, S-48563, S-50384

ZENITH CHASSIS 16E24Q, 16F24Q, 3F21, 7F32, 9F27, S-48563, S-50384

MODEL F3344E (TV CH. 16E24Q)

TRADE NAME	ZENITH Models	TV Chassis	VHF Tuner	Remote Control Receiver	FM-AM Radio Chassis	Power Amp. Chassis	Preamp. Chassis	Master Control Assembly	Record Changer
	F3344E	16E24Q	175-136	S-48563					
	F3344R	16E24Q	175-136	S-48563					
	F3344W	16E24Q	175-136	S-48563					
	F4000W	16F24Q	175-138	S-50384	9F27	7F32	3F21 & Reverb. Unit S-51042	S-50541	169-136

MANUFACTURER: Zenith Radio Corp., 6001 Dickens Avenue, Chicago 39, Illinois

TUBES: TV: VHF - Sixteen; FM-AM Radio Ch. 9F27: Nine; Remote Control Receiver S-48563: Six; Power Amp. Ch. 7F32: Seven; Remote Control Receiver S-50384: Eight; Preamp. 3F21: Three

POWER SUPPLY RATING: 110-120 Volts AC, 60 Cycle
TV - 190 Watts, 1.7 Amp. @ 117 Volts AC
TV with Remote Control S-48563 - 220 Watts, 2 Amp. @ 117 Volts AC (250 Watts, 2.4 Amp. While Tuning)

TUNING RANGE: TV: Channels 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)
FM-AM Radio: BC - 540-1620KC (IF 455KC) FM - 88-108MC (IF 10.7MC)

FOR SERVICE INFORMATION ON RECORD CHANGER #169-136 - SEE SIMILAR V-M 1571 - PHOTOFACT SET 527 FOLDER 14

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

The safety glass is an integral part of the picture tube.

FUSE

TV: A 5 Amp. (Line) Fuse, a .7 Amp. (B+) Fuse, and a Fuse Wire are used for Receiver protection.

Remote Control Receiver: A Line Fuse is used for Remote Control Receiver protection.

Power Amp. Ch. 7F32: A Line Fuse is used for Amplifier Chassis protection.

TUNER OSCILLATOR ADJUSTMENTS

To touch up VHF Oscillator, remove rear cover.

AGC

The AGC may be varied by means of an AGC Control. (For location, see "Tube Placement Chart".)

FOCUS

The focus may be varied by means of a Focus Control. (For location, see "Tube Placement Chart".)

SYNC STABILITY

Sync stability may be varied by means of a Fringe Lock Control. (For location, see "Tube Placement Chart".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The Horizontal Frequency Slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

WIDTH

The width may be varied by adjusting a metallic sleeve, located between the yoke and the picture tube neck, in or out of the yoke.

BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Buzz Control for MINIMUM buzz and maximum sound. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

PINCUSHION CORRECTION

Reduce the picture size so that the sides of the raster are visible. Position the magnets so that all sides are straight.

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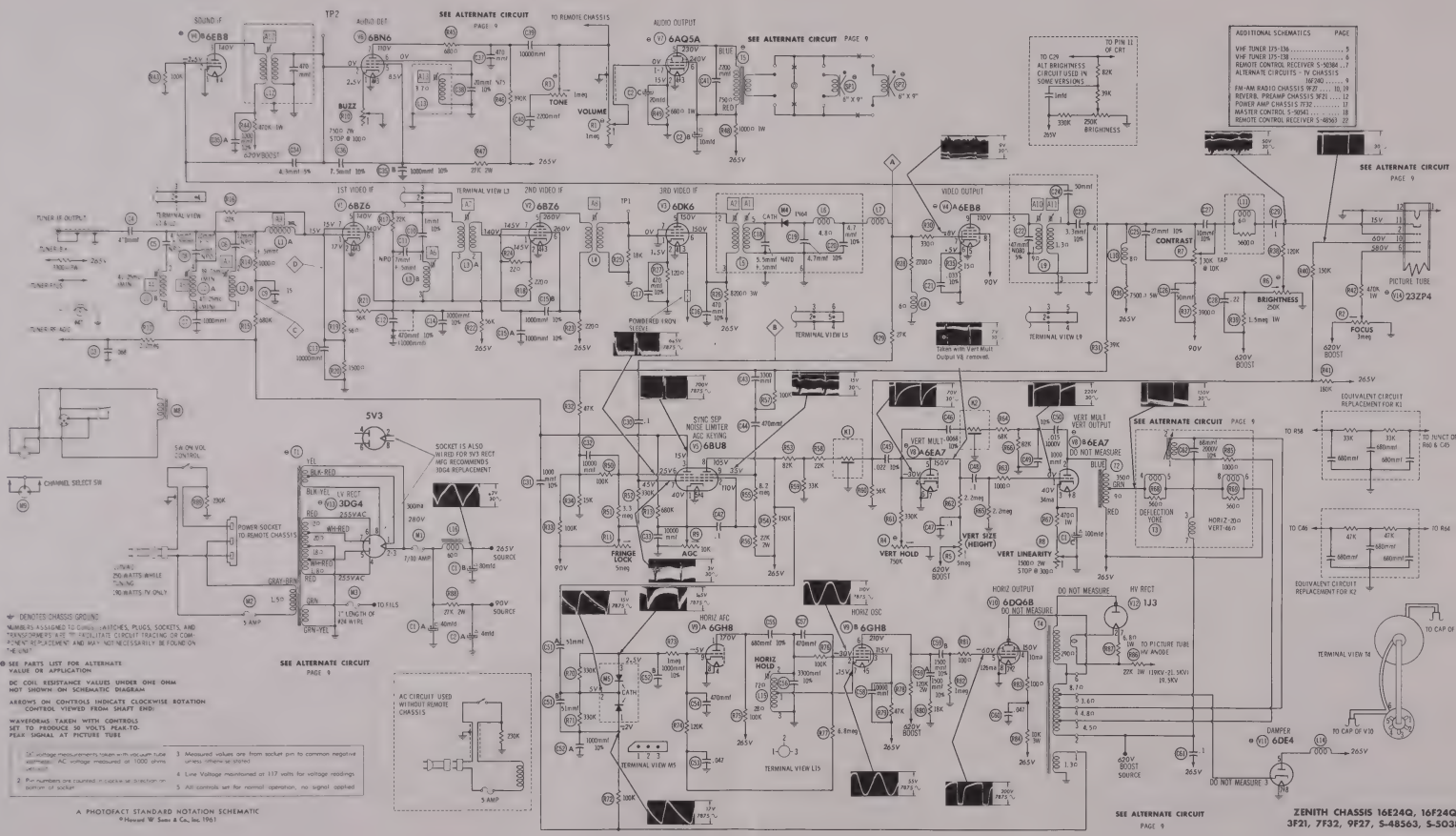
KA573


SOUND IF
AUDIO DET
AUDIO OUTPUT
SEE ALTERNATE CIRCUIT PAGE 9
TO REMOTE CHASSIS
TP2
VOLUME
TONE
BUZZ
1ST VIDEO IF
2ND VIDEO IF
3RD VIDEO IF
VIDEO OUTPUT
TERMINAL VIEW L3
TERMINAL VIEW L5
TERMINAL VIEW L9
POWDERED IRON VIDEO
TUNER IF OUTPUT
TUNER B+
TUNER FILS
TUNER RF AGC
CONTRAST
BRIGHTNESS
FOCUS
PICTURE TUBE
TO PIN 11 OF CRT
ALT BRIGHTNESS CIRCUIT USED IN SOME VERSIONS
ADDITIONAL SCHEMATICS PAGE
VHF TUNER 175-136 5
VHF TUNER 175-138 6
REMOTE CONTROL RECEIVER S-50368 ..7
ALTERNATE CIRCUITS - TV CHASSIS 16F24Q 9
FM-AM RADIO CHASSIS 9F27 ..... 10, 19
REVERB. PREAMP CHASSIS 3F21 12
POWER AMP CHASSIS 7F32 17
MASTER CONTROL S-50342 18
REMOTE CONTROL RECEIVER S-48563 22
SYNC SEP NOISE LIMITER AGC KEYING
AGC
FRINGE LOCK
VERT MULT
VERT OUTPUT
VERT HOLD
VERT SIZE (HEIGHT)
VERT LINEARITY
DEFLECTION YOKE
HORIZ-200 VERT-60
EQUIVALENT CIRCUIT REPLACEMENT FOR K1
EQUIVALENT CIRCUIT REPLACEMENT FOR K2
TO R58
TO R64
TO C46
TO JUNCT OF R60 & C45
HORIZ AFC
HORIZ OSC
HORIZ HOLD
HORIZ OUTPUT
DO NOT MEASURE
HV RECT
TO PICTURE TUBE HV ANODE
DAMPER
TERMINAL VIEW T4
TO CAP OF V12
TO CAP OF V10
5W ON-VOL CONTROL
CHANNEL SELECT SW
POWER SOCKET TO REMOTE CHASSIS
LV RECT
SOCKET IS ALSO WIRED FOR 5V3 RECT MFG RECOMMENDS 30G8 REPLACEMENT
265V SOURCE
90V SOURCE
620V BOOST
620V BOOST SOURCE
TO FILS
1" LENGTH OF #24 WIRE
AC CIRCUIT USED W/ WITHOUT REMOTE CHASSIS
DENOTES CHASSIS GROUND
NUMBERS ASSIGNED TO COMPONENTS, PLUGS, SOCKETS, AND TERMINALS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION CONTROL VIEWED FROM SHAFT END
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE
DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured at 1000 ohms per volt.
Red numbers are counted in clockwise direction from bottom of socket
3. Measured values are from socket pin to common negative unless otherwise stated
4. Line Voltage maintained at 117 volts for voltage readings
5. All controls set for normal operation, no signal applied
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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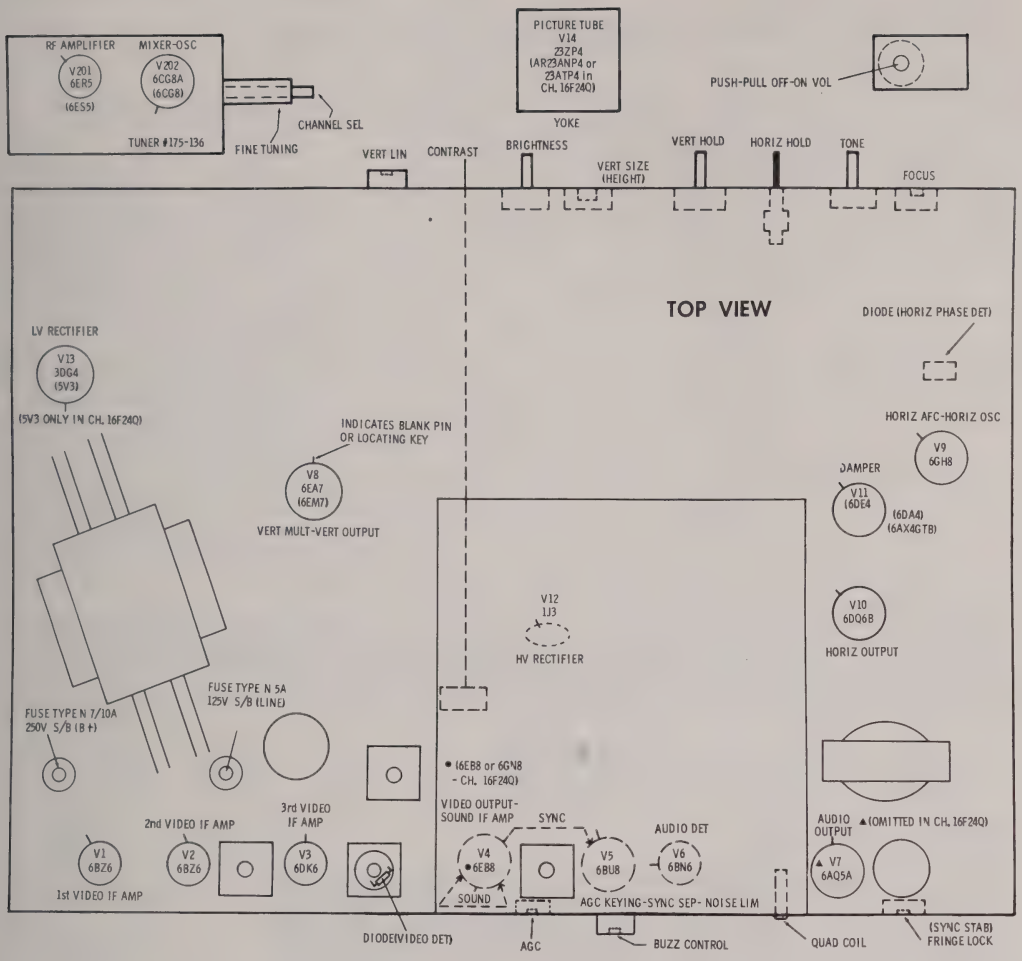
SEE ALTERNATE CIRCUIT PAGE 9
ZENITH CHASSIS 16E24Q, 16F24Q, 3F21, 7F32, 9F27, S-48563, S-50384

TUBE PLACEMENT CHART
TV



TV TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Fuse (Line), V13, Fuse (B+), Fuse (Fil.)

SWEEP FAILURE
No raster, has sound V9, V10, V11, V12, V14
No vertical deflection V8
Poor vert. linearity or foldover V8
Poor horiz. linearity or foldover V9, V10, V11
Narrow picture V9, V10, V11, V13
Vert. off freq. V8
Horiz. off freq. Diodes (Horiz. Phase Det.), V9

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det.), V 4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V14
Has pic, no sound V4, V6, V7
Overloaded picture V5

SYNC FAILURE
No vert. sync V5
No horiz. sync V5
No vert. or horiz. sync V5

ALIGNMENT INSTRUCTIONS
TV

PRE-ALIGNMENT INSTRUCTIONS

Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A1 thru A13 .... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	High side thru 470mmf to TP-1. Low side to chassis. Connect a 56Ω carbon resistor across sweep output.	44MC (10MC Swp.)	39.75MC 41.25MC 45.75MC	Between any two channels	Vert. Amp. thru 10K to point (A). Low side to chassis. * (Across Video Det. load.)	A1, A2	Set sweep generator output to produce 3 volts peak to peak on scope. Adjust A1 and A2 alternately for maximum gain and symmetry with the 45.75MC marker positioned as shown in Fig. 1. The 39.75MC marker can fall within ±.5MC of the specified frequency. If the desired response cannot be obtained, check to see that the cores are entering their respective windings from opposite ends of the coils.
2.	High side to ungrounded tube shield floating over Mixer-Osc. Low side to chassis.	"	39.75MC 41.25MC 47.25MC	"	"	A3, A4, A5, A6	Connect a clip lead from point (B) to chassis. Connect a clip lead from point (C) to point (D). Use high scope gain and adjust A3 thru A6 for MINIMUM marker amplitudes as in Fig.2. A3 controls 39.75MC marker, A4 controls 41.25MC marker, and A5 and A6 control the 47.25MC marker.
3.	"	"	41.25MC 42.75MC 45.0MC 45.75MC	"	"	A7, A8, A9 and Mixer Plate Coil	Remove clip lead from point (D) and connect to chassis. Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown. A7 affects low side of curve and A8 affects the high side. Remove clip leads.

SOUND IF ALIGNMENT

Connect an adjustable attenuator between the antenna and the receiver antenna terminals. Tune in a TV station and adjust the attenuator until the signal is below the limiting level of the Audio Detector as evidenced by a hiss similar to super-regeneration in the sound.
Adjust A10, A11, A12, and A13 for maximum sound of best quality. Adjust the Buzz Control for MINIMUM buzz.
If the hiss disappears during alignment, further reduce the signal level until the hiss returns.

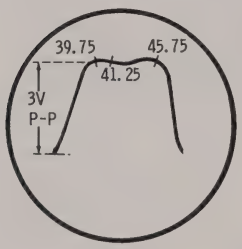


FIG.1

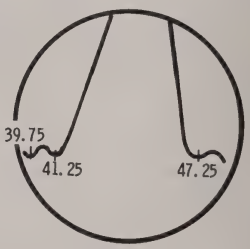


FIG.2

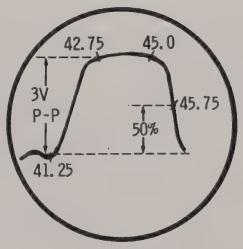
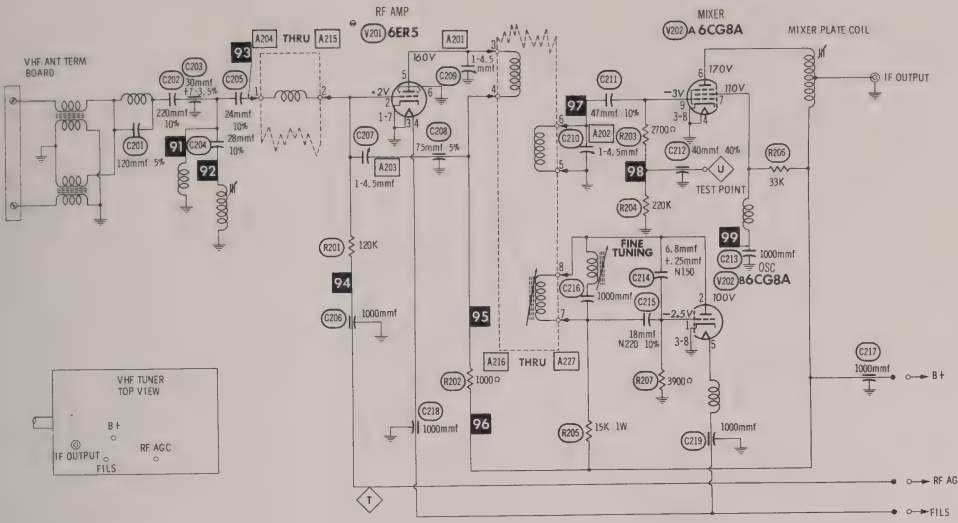


FIG.3



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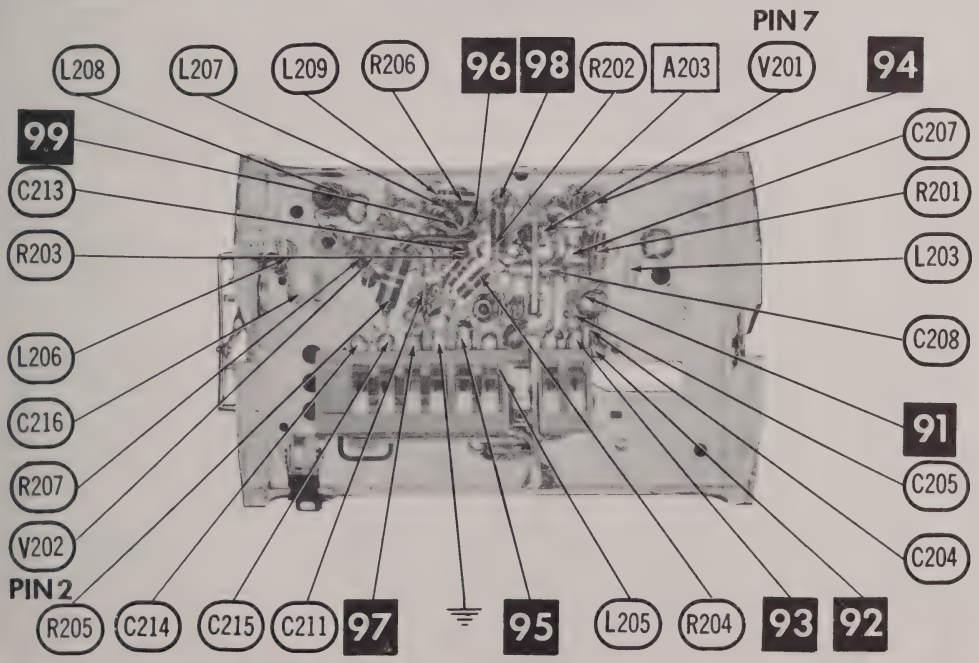
VHF TUNER 175-136



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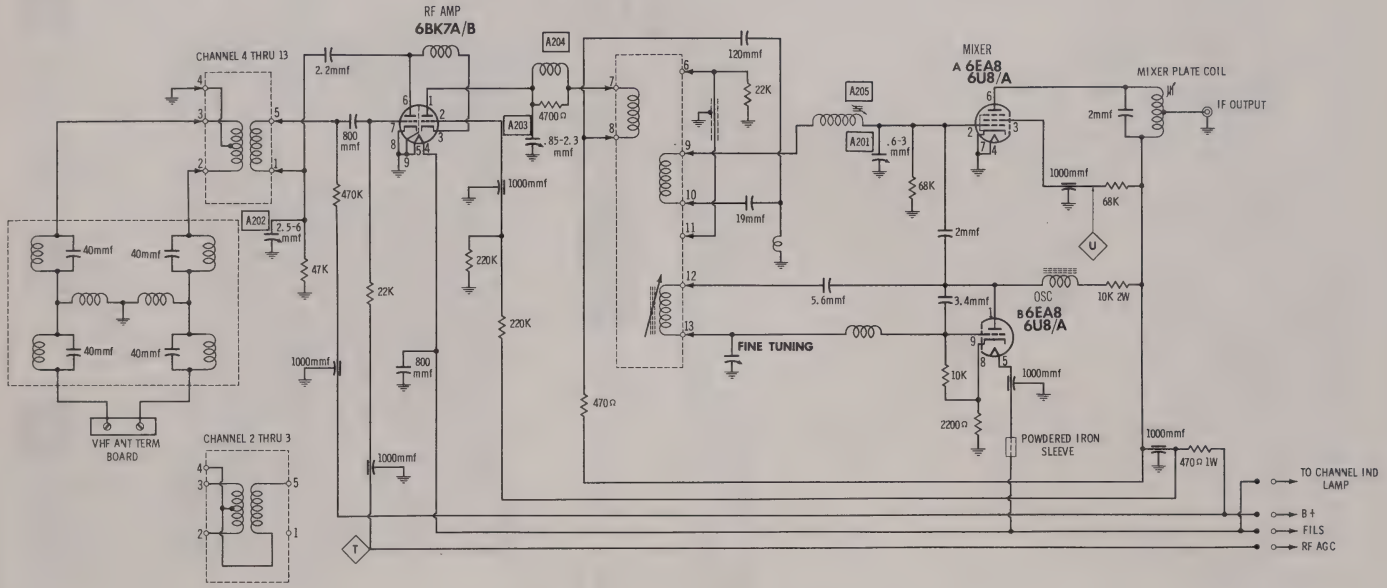
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

VHF TUNER 175-136 - BOTTOM VIEW



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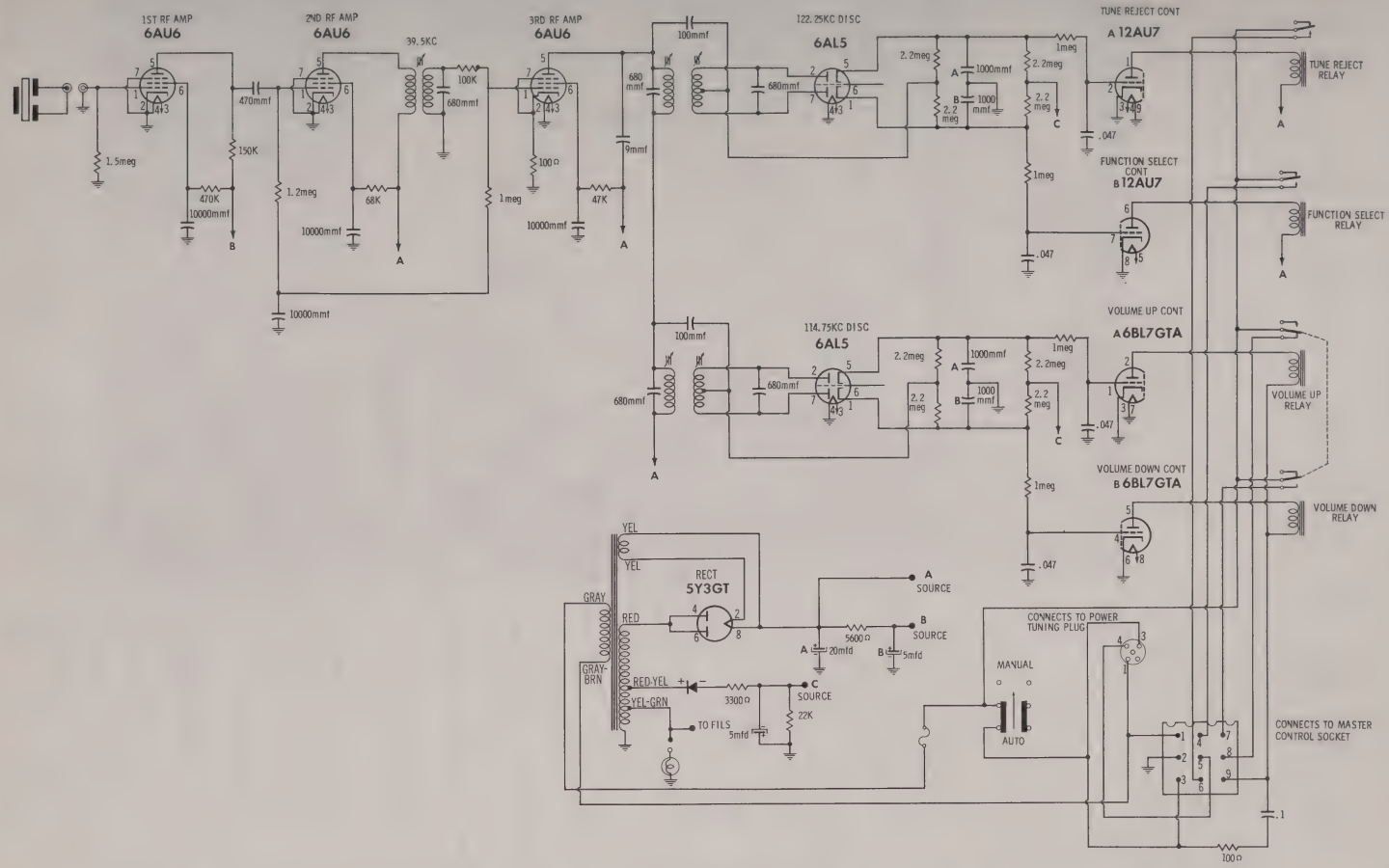
VHF TUNER 175-138



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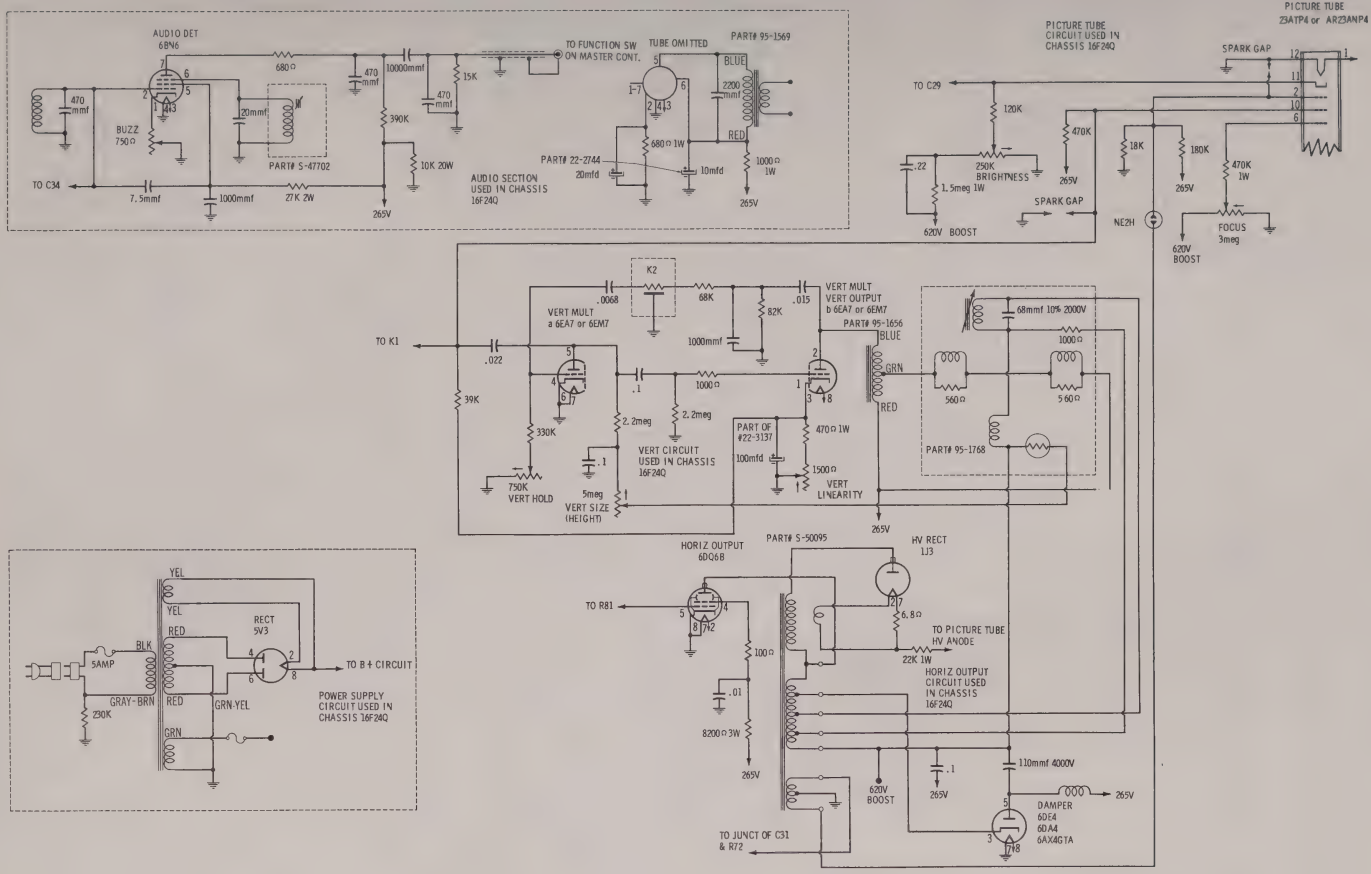
REMOTE CONTROL RECEIVER S-50384

ZENITH CHASSIS 16E24Q, 16F24Q,
3F21, 7F32, 9F27, S-48563, S-50384

FOLDER 2

TV CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.



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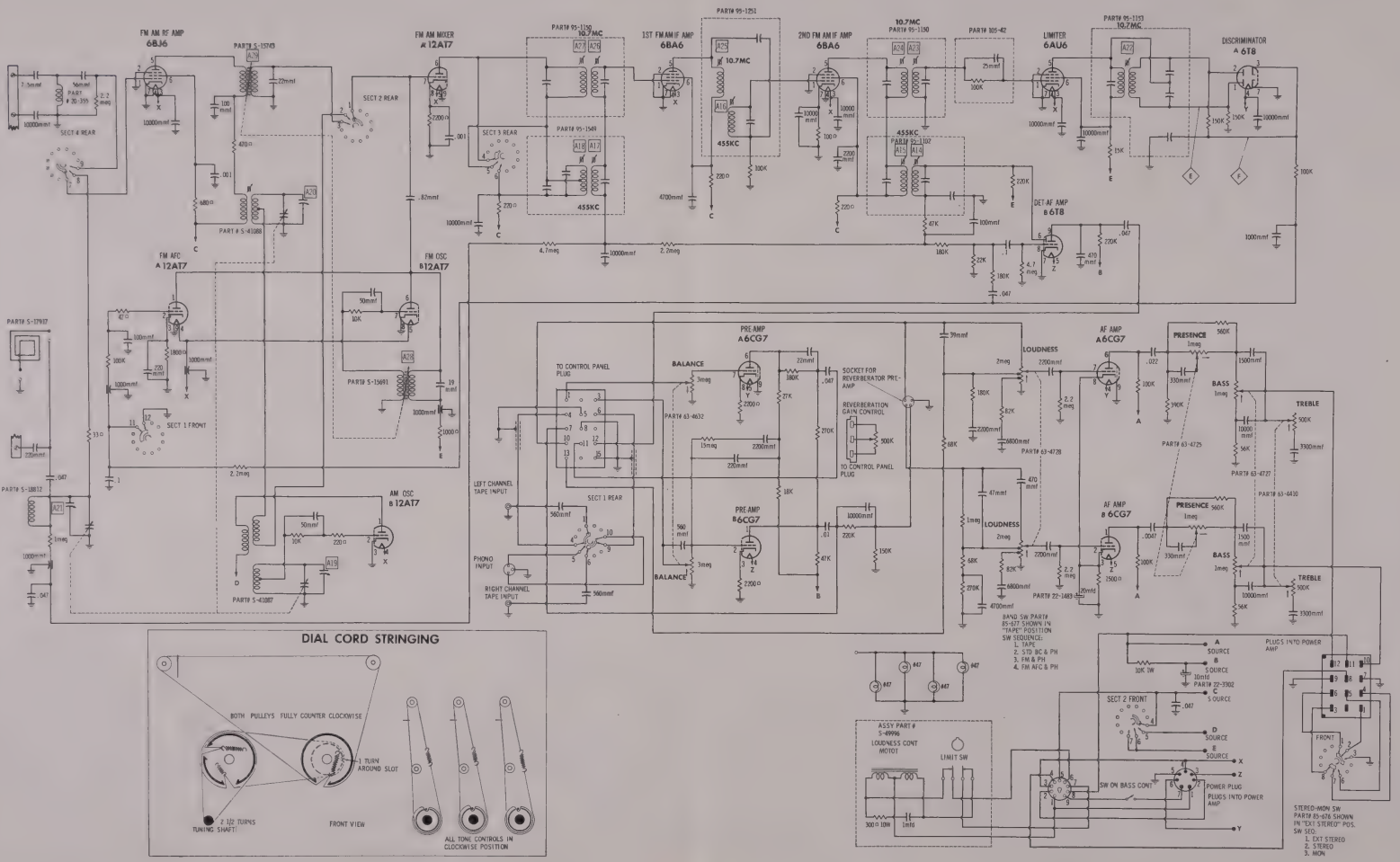
ALTERNATE CIRCUITS

ZENITH CHASSIS 16E24Q, 16F24Q, 3F21, 7F32, 9F27, S-48563, S-50384



DIAL CORD STRINGING

BOTH PULLEYS FULLY COUNTER CLOCKWISE
1 TURN AROUND SLOT
2 1/2 TURNS TUNING SHAFT
FRONT VIEW
ALL TONE CONTROLS IN CLOCKWISE POSITION

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FM-AM RADIO CHASSIS - 9F27

FM-AM RADIO

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Loudness Control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

AM ALIGNMENT - SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .05mfd to pin 7 (grid) of AM Mixer. Low side to chassis.	455KC (400∿ Mod.)	AM Tuning gang fully open	Across Voice Coil	A14, A15, A16, A17, A18	Adjust for maximum output.
2.	Loop	1600KC	1600KC	"	A19	Fashion a loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	1400KC	1400KC Signal	"	A20, A21	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM - SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	High side thru .05mfd to pin 7 (grid) of FM Mixer. Low side to chassis.	10.7MC (Unmod.)	FM Point of non-interference	DC probe thru 1meg to point (E). Common to chassis.	A22, A23, A24, A25, A26, A27	Adjust for maximum deflection.
5.	"	"	"	DC probe to point (E). Common to chassis.	A28	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE - SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	High side thru .05mfd to pin 7 (grid) of FM Mixer. Low side to chassis.	10.7MC (450KC Swp.)	FM Point of non-interference	Vert. Amp. thru 47K to point (E). Low side to chassis.	A22, A23, A24, A25, A26, A27	Adjust for maximum gain and symmetry of response similar to Fig. 4 with markers as shown.
5.	"	"	"	Vert. Amp. to point (E). Low side to chassis.	A28	Adjust to place marker at the center of crossover lines similar to Fig. 5. SLIGHTLY retouch A18 for maximum amplitude and straightness of cross-over lines.

FM RF ALIGNMENT - SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	High side thru 270Ω to FM Antenna Terminal. Low side to chassis.	98MC (Unmod.)	FM 98MC	DC probe to point (E). Common to chassis.	A29, A30	Adjust for maximum deflection.

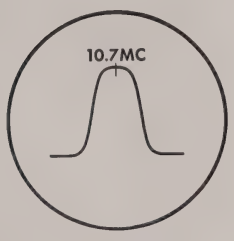


FIG. 4

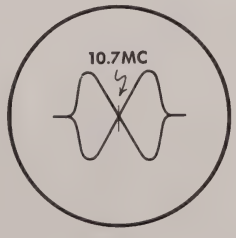
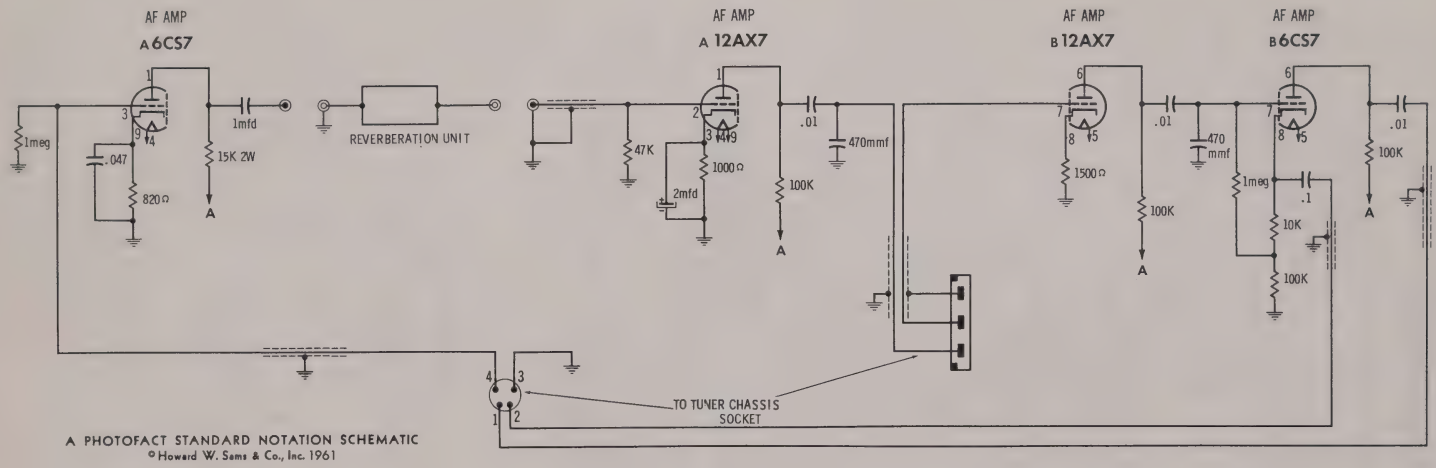


FIG. 5



A PHOTOFACT STANDARD NOTATION SCHEMATIC
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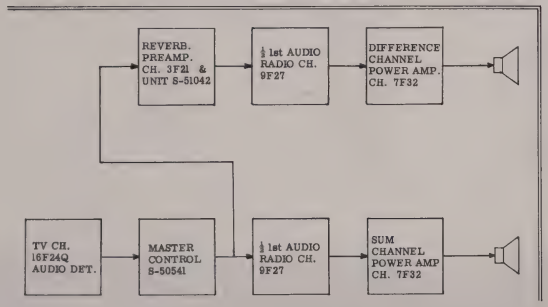
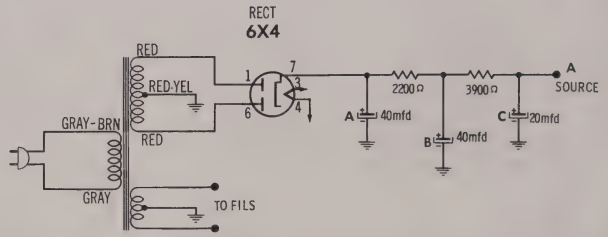

REVERB. PREAMP. CH. 3F21 & UNIT S-51042
½ 1st AUDIO RADIO CH. 9F27
DIFFERENCE CHANNEL POWER AMP. CH. 7F32
TV CH. 16F24Q AUDIO DET.
MASTER CONTROL S-50541
½ 1st AUDIO RADIO CH. 9F27
SUM CHANNEL POWER AMP CH. 7F32

BLOCK DIAGRAM
TV SOUND PATH-MODEL F4000



REVERB. PREAMP CH. 3F21

TV PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M6	Tuner	175-136	STANDARD COIL REPLACEMENT #CG-4220-A VHF, Models F3344E, R, W (Ch. 16E24Q)
	Tuner	175-138	VHF, Model F4000W (Ch. 16F24Q)
M7	Magnet	S-46505	Corrector (2 used)
M8	Motor Drive Assembly	S-43732	Includes Motor (46-1153) and Switch (46-41498)
	Switch		
M9		S-44018	Channel Selector (on TV Escutcheon)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	S-47430	VHF Channel Selector
Knob	46-3035	Fine Tuning
Knob	199-301	Brightness, Vert. Hold, Models F3344E, R, W
Knob	S-50934	Brightness, Vert. Hold, Model F4000W
Knob	199-303	Contrast, Models F3344E, R, W
Knob	S-50935	Contrast, Model F4000W
Knob	46-3014	Horiz. Hold, Models F3344E, R, W
Knob	46-3009	Horiz. Hold, Model F4000a
Knob	199-301	Tone, Models F3344E, R, W
Knob	S-50483	
	S-50475	Tone, Model F4000W
Knob	S-46736	Volume, Models F3344E, R, W
Knob	46-3283	Volume, Model F4000W
Cabinet	14-3192	Model F3344E
Cabinet	14-3191	Model F3344R
Cabinet	14-3190	Model F3344W
Cabinet	14-3310	Model F4000W

WIRING DATA

High Voltage Lead	Use BELDEN No. [illegible]
Shielded Hookup Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8486 (Round) - 8 Conductor

PARTS LIST AND DESCRIPTIONS
REMOTE CONTROL RECEIVER

S-48563

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
	• GENERAL ELECTRIC •	RAYTHEON • SYLVANIA •			
V15	1st RF Amp.	6AU6	V19	Tuning Relay Control Amp. - Volume Relay Control Rectifier	6CM7
V16	2nd RF Amp.	6AU6	V20		5Y3GT
V17	Limiter - Tripler	6AU6			
V18	Discriminator	6AL5			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT	ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C83A	20	350	23-3123	AFH3-50	B0350	FF23L3	TMD-3520	TVL-3754	Note 1
B	45	350							
C84	5	50	23-3941	PRH550	BSRS-50	TC30	TD-5-50	TVA-1303	

Note 1. Some versions may use a 10mfd @ 350V for C83A (Pt. #23-2943) and a .01mfd for C83B.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C55	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C56	470		(100) †	BPD-00047	DD-471	BYA10Z47	CCD-471	B-247	10TS-T47
C57	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C58	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C59	680	10%		1469-00068		5RST68	CM-19B-68K	MCJ255	MS-368
C70	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C71	680	10%		1469-00068		5RST68	CM-19B-68K	MCJ255	MS-368
C72	100	10%		1469-0001	TCZ-100	22RS71	CM-19B-101K	MCJ225	MS-31
C73	680	10%		1469-00068		5RST68	CM-19B-68K	MCJ255	MS-368
C74A	1000	10%		DI-1000	DD-103	5HS1K	CCD-103	GP100	10TS-D10
B	1000	10%		DI-1000	DD-102	5HS1K	CCD-102	GP110	10TS-D10
C75	047	200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C76	047	200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C77	3300			BPD-0033	DD-332	BYA10S33	CCD-332	B-233	5HK-D33

† Alternate Value.

REMOTE CONTROL RECEIVER PARTS LIST (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R90	1.5meg			
R91	150K			
R92	470K			
R93	1.2meg			
R94	68K			
R95	100K			
R96	1meg			
R97	68K			
R98	100Ω			
R99	2.2meg			

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R100	2.2meg			
R101	1meg			
R102	2.2meg			
R103	1meg			
R104	2.2meg			
R105	100K			
R106	3300Ω			
R107	5600Ω			(10K) *
R108	82K			
R109	3300Ω			

* Alternate Value.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L17	39.5KC Trans.	S-43725					
L18	Discriminator Pri.	S-24788					
L19	Discriminator Sec.	S-24789					

TRANSFORMER (POWER)

ITEM No.	RATING	REPLACEMENT DATA: ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T6	PRI.: 117V @ .32A	SEC. 1: 325V @ .020A DC Tap @ 35V @ .001A DC Tap @ 6.3V @ 1.9A	95-1612				
	SEC. 2: 5V @ 2A						

POWER RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA: ZENITH PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M10	.001A	212-21		12		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: ZENITH PART No. FUSE	ZENITH PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M11	3AG	3/4A 125V S/B	136-41		315.750 (3AG 3/4A 125V S/B)	357001	MDL 3/4	4405

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M2	Switch	83-580	Auto-Manual (DPDT Slide Type)
M3	Relay	195-5 or 195-6	Clockwise
M4	Relay	S-48660	Step (Volume), Includes Step Switch
M5	Microphone	S-48155	

VHF TUNER PARTS LIST AND DESCRIPTIONS

175-136

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
	• GENERAL ELECTRIC •	RAYTHEON • SYLVANIA •			
V201	RF Amp.	6ER5 (6ER8) *	V202	Mixer - Osc.	6CG8A (6CG8) *

* Alternate

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	120	5%			DTZ-120	C10T12C		CNO-312	10TCC-T12
C202	220	10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C203	30	±7-.5%	#22-3111						
C204	28	10%		DI-27	DD-270	L10Q27	CCD-270	GP327	10TS-Q27
C205	24	10%		DI-25	DD-240	L10Q24	CCD-250	GP325	10TS-Q25
C206	1000			EF-001	MFT-1000		CCF-102	CT280A	
C207	1-4.5		#22-3148		829-6				
C208	75	5%	#22-3147						
C209	1-4.5		#22-3009		829-6				
C210	1-4.5		#22-3009		829-6				
C211	47	10%		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C212	40	40%	#22-3112						
C213	1000			BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C214	6.5	N150 ± .25mmf	#22-3291				*		10TCP-V6S
C215	18	N220 10%	#22-3025				*		10TCR-Q18
C216	1000			EF-001	MFT-1000		CCF-102	CT280A	
C217	1000			EF-001	MFT-1000		CCF-102	CT280A	
C218	1000			EF-001	MFT-1000		CCF-102	CT280A	
C219	1000			EF-001	MFT-1000		CCF-102	CT280A	

Zenith Part Number.

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

COILS (RF-IF)

ITEM No.	USE	ZENITH PART No.	NOTES
L201	Ant., Trans.	8-41511	
L202	RF Choke	20-265	
L203	RF Choke	20-758	
L204	Trap	8-40497	
L205A	Ant., RF, Mixer & Osc.	174-2	Channel 2
B	"	174-3	Channel 3
C	"	174-4	Channel 4
D	"	174-5	Channel 5
E	"	174-6	Channel 6
F	"	174-7	Channel 7
L205G	Ant., RF, Mixer & Osc.	174-8	Channel 8
H	"	174-9	Channel 9
J	"	174-10	Channel 10
K	"	174-11	Channel 11
L	"	174-12	Channel 12
M	"	174-13	Channel 13
L208	Fine Tuning Coil	S-43559	
L207	RF Choke	20-721	
L208	Mixer Plate	S-45638	
L209	Fil. Choke	20-734	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R201	120K			
R202	1000Ω			
R203	2700Ω			
R204	220K			

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R205	15K			
R206	33K			
R207	3900Ω			

ZENITH CHASSIS 16E24Q, 16F24Q, 3F21, 7F32, 9F27, S-48563, S-50384

FOLDER 2

SET 528 FOLDER 2

TV PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No	USE	GENERAL ELECTRIC • TYPE	RAYTHEON • TYPE	SYLVANIA • TYPE
V1	1st Video IF Amp.	6D26		
V2	2nd Video IF Amp.	6D26		
V3	3rd Video IF Amp.	6D26		
V4	Video Output -			
	Sound IF Amp. ①	6EB8		
V5	AGC Keying - Sync Sep. -			
	Noise Limiter	6BJ8		
V6	Audio Discriminator	6BJ6		
V7	Audio Output ②		6AQ5A	
V8	Vert. Mult. - Vert. Output		6FA7 (6EMT) *	
V9	Horiz. AFC - Horiz. Osc.		6GH8	
V10	Horiz. Output		6DQ6B	
V11	Damper		6DP4 (6DA4, 6AX4GTB)*	
V12	HV Rectifier		1J3	
V13	LV Rectifier ③		3DG4	

① Chassis 16F24Q uses 6EB8 or 6GN8. ② Omitted in Chassis 16F24Q. ③ Chassis 16E24Q uses 3DG4 or 5V3; Chassis 16F24Q uses 5V3.
* Alternate.

PICTURE TUBE

ITEM No.	REPLACEMENT DATA: ZENITH PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
V14	23ZP4 * or 23ZP4 †		A23AXP4* or A23ATP4 †		23ZP4 ①	① Silver Screen "85" * Chassis 16E24Q † Chassis 16F24Q

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	ARROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	40	400	22-3137	AFH5-57-93	C0890	FP333.2	TMT-3480	TVL-4663.4	
B	40	400							
C	4100	50							
C2A	4	350	23-3744	AFH3-480	C1445	FP368.68	TMT-3459	TVL-3665	
B	40	400							
C	20	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No	RATING:		REMARKS	REPLACEMENT DATA: ZENITH PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	.068	200V		P28BN-068		CUB4S68	4DP-3-683	GEM-4168	47M-S68
C4	470			BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C5	4.5	NPO ± .5mmf		NPO-DI 4.7	DTZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C6	12	NPO ± .5mmf			TCZ-12	C10Q12C	CCTO-130	CNO-412	10TCC-Q12
C7	1000			BPD-001	DD-103	BYA10D1	CCD-103	B-210	5HK-D10
C8	12	NPO ± .5mmf			TCZ-12	C10Q12C	CCTO-130	CNO-412	10TCC-Q12
C9	.15	200V		P28BN-15		CUB2S15	3DP-3-154	GEM-2015	2TM-P15
C10	1	10%		NPO-SI 1.0	TCZ-1			CNO-510	10TCC-V10
C11	7	NPO ± .5mmf		NPO-DI 6.8	DTZ-6R8	C10V68C	CCTO-6R8	CNO-668	10TCC-V68
C12	470	10%	(1000) †	DI-470		S3S747	CCD-471	GP347	10TS-T47
C13	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C14	1000	10%		DI-1000	DD-102	P36S1D	CCD-102	GP210	10TS-D10
C15A	1000	10%		DI-1000	DD-102	P36S1D	CCD-102	GP210	10TS-D10
B	1000	10%		DI-1000	DD-102	P36S1D	CCD-102	GP210	10TS-D10
C16	470	10%		1469-00047		CM-15B1-471K	MCJ244	MS-347	
C17	470	10%		DI-470	DD-471	S3S747	CCD-471	GP347	10TS-T47
C18	5.5	N470 ± .5mmf	#22-3321						
C19	4.7	10%		NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C20	4.7	10%		NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C21	.033	200V	10%	V84C2S33-10%		P36S333	4DP-3-333	GEM-1813	6TM-S33
C22	47	N560	5%			"	"	"	"
C23	3.3		10%	NPO-SI 3.3	TCZ-3R3	C10V33C	CCTO-3R3	CNO-533	10TCC-V33
C24	50			SI 50		L10Q5	CCD-500	GP450	10TS-Q50
C25	27		10%	NPO-SI 27		D5-270	L10Q27	CCD-270	GP427	10TS-Q27
C26	50			SI 50		D5-500	L10Q50	CCD-500	GP450	10TS-Q50
C27	10		10%	NPO-SI 10		D5-100	L10Q1	CCD-100	GP410	10TS-Q10
C28	.33	600V		P68BN-33		CUB6P33	6DP-5-234	GEM-5022	6TM-P33
C29	.1	400V		P48BN-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C30	.1	400V		P48BN-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C31	1000		10%	DI-1000	DD-103	CUB10I1	CCD-102	GP210	10TS-D10
C32	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C33	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C34	4.3		5%	#22-3315		C10V4C			
C35A	1000		10%		DD-103	P36S1A	CCD-103	GP210	10TS-D10
B	1000		10%	DI-1000	DD-103	P36S1D	CCD-102	GP210	10TS-D10
C36	7.5		10%			C10V8C	CCD-7R5	GP580	10TS-V7R
C37	470			BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C38	30	N75	10%	#22-3139					
C39	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C40	2200			BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C41	2200			BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C43	.1	400V		P48BN-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C43	3300			BPD-0033	DD-332	BYA10D33	CCD-332	B-333	5HK-D33
C44	470			BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C45	.022	400V	10%	V84C4S22-10%		P4S322	4DP-3-223	GEM-1813	4TM-S22
C46	.0068	200V	10%	V84C2D68-10%		P36D68	6DP-1-682	GEM-16268	6TM-D68
C47	.1	400V		P68BN-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C48	.1	400V		P48BN-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C49	1000			BPD-001	DD-103	BYA10D1	CCD-102	B-210	5HK-D10
C50	.015	1000V	10%	P106SCM-015		DPM20S15	16DP-4-153		10TM-S15
C51A	SI			DI-50	DD-510	L10Q51	CCD-500	GP450	10TS-Q50
B	SI			DI-50	DD-510	L10Q51	CCD-500	GP450	10TS-Q50
C52A	1000		10%	DI-1000	DD-102	P36S1D	CCD-102	GP210	10TS-D10
B	1000		10%	DI-1000	DD-102	P36S1D	CCD-102	GP210	10TS-D10
C53	.047	200V		P28BN-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C54	470			BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C55	680		10%	1469-00068		1RSD33	CM-30B-331K	MCJ255	MS-368
C56	3300		10%	1469-00033		1RSD33	CM-30B-332K	MCJ462	MS-233
C57	470			BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C58	1000			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C59A	1500		10%	DI-1500	DD-152	P36S1D5	CCD-152	GP215	10TS-D15
B	1500		10%	DI-1500	DD-152	P36S1D5	CCD-152	GP215	10TS-D15
C60	.047	400V		P48BN-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C61	.1	600V		P68BN-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C63	66	2000V	10%			BYA30Q66	VCM-20-6601K	3DY-466	

† Alternate Value. * Not normally in distributor's stock. Available thru distributor on order to manufacturer. ◊ Zenith Part Number.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	63-4951 ①	APL-697	C476-1meg-8	B11-137 *	FP161L	Volume
B	Shaft			AK-33	RS-3/16	Not Req.	D837	
C	Switch			Not Req.	Not Req.	SW3 *	Not Req.	Push-Pull Off-On
R2	3meg	½	63-4455	TT-54	B47-3meg-8	B1L-23	BU59	Focus
R3A	1meg	½	63-4679 ②	E-70	A47-1meg-2	Q3-137	U33	Tone
B	Shaft			Not Req.	K3S-3	Not Req.	Not Req.	
R4A	750K	½	63-4677 ③	B-66	A47-750K-8	Q1J-136	RU754L	Vert. Hold
B	Shaft			Not Req.	K3S-3	Not Req.	SL3500	
C	Bushing			Not Req.	Not Req.	Not Req.	SL38	
R5	5meg	½	63-4660	TT-57	B47-5meg-8	B1C-5	FTA56L	Vert. Size (Height)
R6A	250K	½	63-4676 ④	B-50	A47-250K-8	Q1J-130	U46	Brightness
B	Shaft			Not Req.	K3S-3	Not Req.	Not Req.	
R7	30K	½	63-4489					Contrast
R8	10K Tap 3000 Stop	2(WW)	63-4630	WN-152	59-1500	112-1500	FL-1.5K	Vert. Linearity
R9A	10K	½	63-4095	TT-14	B47-10K-8	B1L-118	TA14L	AGC
B	Shaft			Not Req.	Not Req.	TM-4	Not Req.	
R10	750Ω 100Ω Stop	2(WW)	63-3304	WN-751	59-800	112-650	FL-750	Buzz
R11A	5meg	½	63-4012	TT-67	B47-5meg-2	B1J-141	FTA56L	Fringe Lock (Sync Stab.)
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	

* Factory Assembled Part #PPQ1-137 (SKS).
** Use 270Ω 2W series Resistor.
† Use 100Ω 2W series Resistor.
① Model F4000W uses Part #63-4728.
② Not used in Model F4000W.
③ Model F4000W uses Part #63-4486.
④ Model F4000W uses Part #63-4487.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R12	2.2meg			
R13	680K			
R14	1000			
R15	680K			
R16	22K			
R17	22K			
R18	220Ω			
R19	56Ω			
R20	1500Ω			
R21	56K			
R22	56K			
R23	220Ω			
R24	22Ω			
R25	18K			
R26	9200Ω 3W	PW3-9200	3G-9200	
R27	120Ω			
R28	2700Ω			
R29	27K			
R30	330Ω			
R31	39K			
R32	47K			
R33	100K			
R34	15K			
R35	15Ω			
R36	7500Ω 5W	PW5-7500	5G-7500	
R37	3900Ω			
R38	180K			
R39	1.5meg 1W			
R40	150K			
R41	180K			
R42	470K 1W			
R43	100K			
R44	470K			
R45	680Ω			
R46	390K			
R47	27K 2W			
R48	1000Ω 1W			
R49	680Ω 1W			
R50	100K			

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R51	3.3meg			
R52	330K			
R53	82K			
R54	150K			
R55	8.2meg			
R56	22K 2W			
R57	100K			
R58	22K			
R59	33K			
R60	56K			
R61	330K			
R62	2.2meg			
R63	1000Ω			
R64	68K			
R65	2.2meg			
R66	82K			
R67	470Ω 1W			
R68	560Ω			
R69	560Ω			
R70	330K			
R71	330K			
R72	100K			
R73	1meg			
R74	120K			
R75	100K			
R76	100K			
R77	6.8meg			
R78	120K 2W			
R79	47K			
R80	18K			
R81	100Ω			
R82	1meg			
R83	100Ω			
R84	10K 3W	PW3-10K	3G-10K	
R85	1000Ω			
R86	22K 1W			
R87	6.8Ω 1W			
R88	27K 2W			
R89	230K			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1A	1st Video IF	S-48045 ①					① Complete Assembly Part #S-48504.
B	41.25MC Trap	S-41883					② Complete Assembly Part #S-47967.
L2A	47.25MC Trap						③ Complete Assembly
B	39.75MC Trap	S-41889				T225	Part #S-43126.
L3A	2nd Video IF						④ Wound on 5600Ω Resistor.
B	47.25MC Trap	S-48760					⑤ Complete Assembly
L4	3rd Video IF	S-47960 ②					Part #S-43707.
L5	4th Video IF	S-41879	TV-181	6177	RTC-8594	T304	* Parallel with 5600Ω Resistor.
L6	Peaking (90uh)	S-21868	BC-585	4610	RTC-8520	T859	
L7	RF Choke (6uh)	S-43619	TV-184	6180	RTC-8597	T310	
L8	Peaking (170uh)	S-43125 ③					
L8A	4.5MC Trap						
B	1st Sound IF	S-16011	TV-185	6181	RTC-8598	T315	
L10	Peaking (250uh)	S-43618 ④	TV-184 *	6180 *	RTC-8597 *	T310 *	
L11	Peaking (170uh)	S-41899 ⑤					
L12	2nd Sound IF	S-47702	TV-121	1480	RTC-8605	T281	
L13	Quadrature	S-22777	BC-586	4613	RTC-8522	T980	
L14	RF Choke (10uh)						

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	Merit PART No.	Miller PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	Workman TV PART No.
L15	Horiz. Osc.	S-45676							

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	RATINGS: DC RES.	RATINGS: INDUCTANCE @ CURRENT 1000 ~\	REPLACEMENT DATA: ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
L16	.300A	60Ω	1.3 Hy.	95-1681		C-2996	C-2343	26C44	C-29X

TRANSFORMER (POWER)

ITEM No.	RATING: PRI	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V ② 1.7A	560VCT Tap ④ 510VCT @ .300A DC	5V ③ 3.8A Tap ④ 3V ④ 4.5A	6.3V ③ 8.3A	95-1726 ①					① Chassis 16F24Q uses Part #95-1680.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	Merit PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	Vert. Output	95-1656	A-2821	VO-35 ①	A-8149	26S75 ②③	A-131X	
T3	Yoke (Horiz. 14MH) (90°) (Vert. 44MH)	95-1654	MDF-91 ④⑤⑥	PCM-1045 ④⑤⑥	DY-39A	Y-39 ⑦	Y-40 ⑥ & VW3	
	Yoke	95-1788 †					-	
	Rear Cover and Centering Device						YC-112	
T4	Horiz. Output	S-46592	HVO-179				D-198	
	Horiz. Output	S-50095 †						

† Used in Chassis 16F24Q.
① Cut and tape green lead.
② Use original rear cover and centering device (and yoke damping network if necessary).
③ Cut and form a piece of .010 gauge fish paper inside the yoke itself and support with acetate cement to provide an insulation between width sleeve and the yoke proper.
④ Connect yoke terminal #3 to horiz. output transformer terminal #4; yoke #4 to horiz. output transformer #2; connect 1000Ω, ½ watt Resistor from yoke terminal #2 and #7 to horiz. output transformer terminal #3.
⑤ Connect yoke terminal #2 to horiz. output transformer #4; yoke #7 to horiz. output #2; connect 1000Ω, ½ watt Resistor from yoke terminal #3 and #1 to horiz. output terminal #3.
⑥ Connect as autoformer.
⑦ Use 6 to 1 turns ratio.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	8600Ω	3-4Ω	95-1569W ①	A-2900	A-3850	24S52	S-18Z	① Alternate Part #95-1569.

SPEAKER

ITEM No.	TYPE: SIZE	TYPE: FIELD	TYPE: V. C. IMP.	REPLACEMENT DATA: ZENITH PART No.	QUAM PART No.	NOTES
SP1	6" x 9"	PM	6-8Ω	49-831 *	69AIZ6.8	* Used in Models F3344E, H, W.
SP2	6" x 9"	PM	6-8Ω	49-831 *	69AIZ6.8	
	Tweeter (Horn Type)			49-867 †		† Two used in Model F4000W.
	12"	PM		49-934 †		

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ZENITH PART No.	REPLACEMENT DATA
K1	Vert. Integrator		87-5	Centralab PC-407
K2	Vert. Feedback		87-4	Sprague V-15 Centralab PC-408 Sprague V-14

FUSES

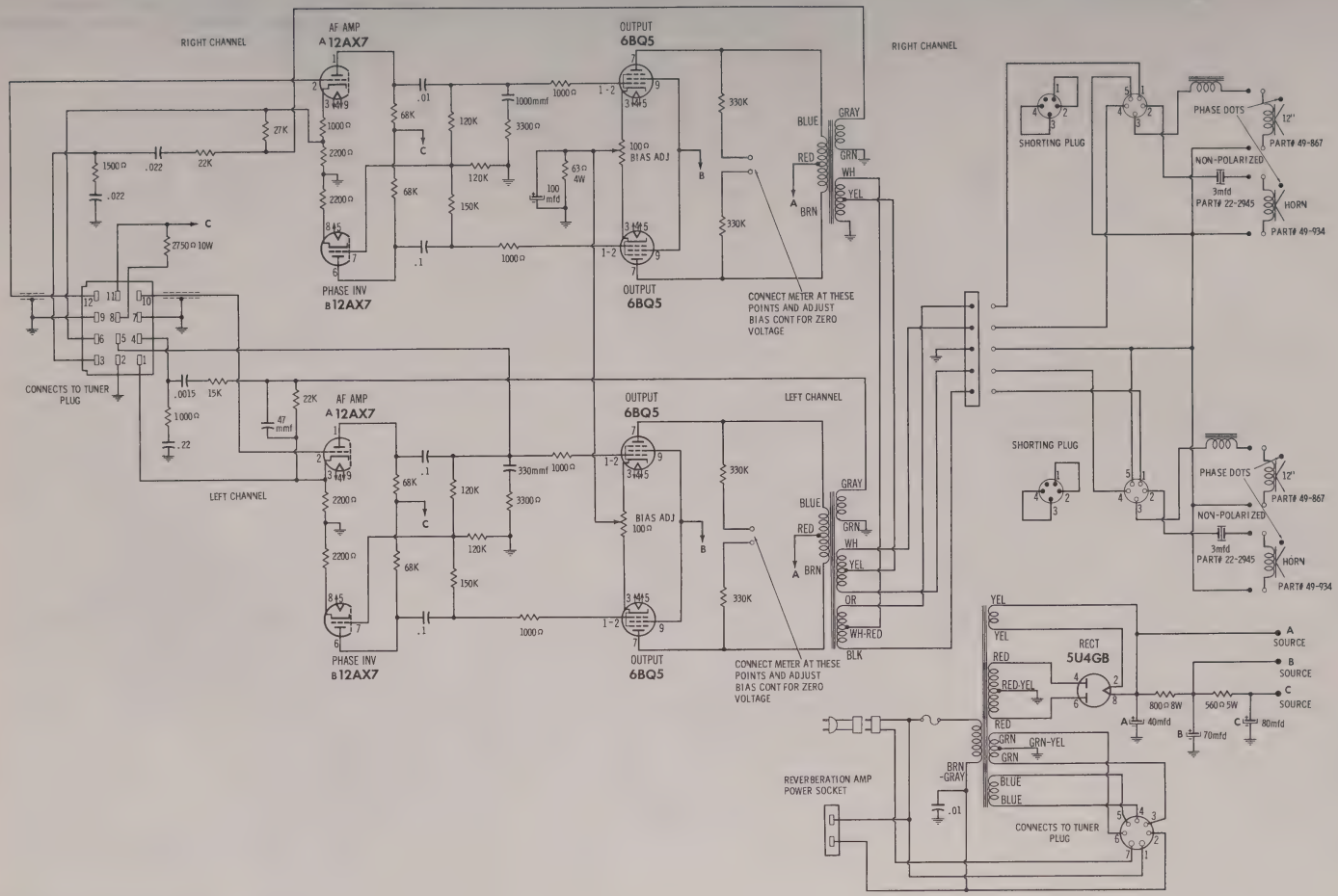
ITEM No.	TYPE	RATING	REPLACEMENT DATA: ZENITH PART No.	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	N	7/10A 125V S/B	136-38	52-21	353.700 (N 7/10A 125V S/B)	346010	N 7/10 HN 1/2 to 3/4
M2	N	5A 125V S/B	136-42	52-24	353005 (N 5A 125V S/B)	346019	N 5 HN 3 1/2 to 5
M3	1" length of #24 wire						

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: ZENITH PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M4	1N64	103-20 *	6GC1 *			* Dual Selenium, Common Cathode
M5	1N64	103-23 *		1N64 *	1N64 *	* Video Det., Crystal Diode

ZENITH CHASSIS 16E24Q, 16F24Q, 3F21, 7F32, 9F27, S-48563, S-50384

FOLDER 2



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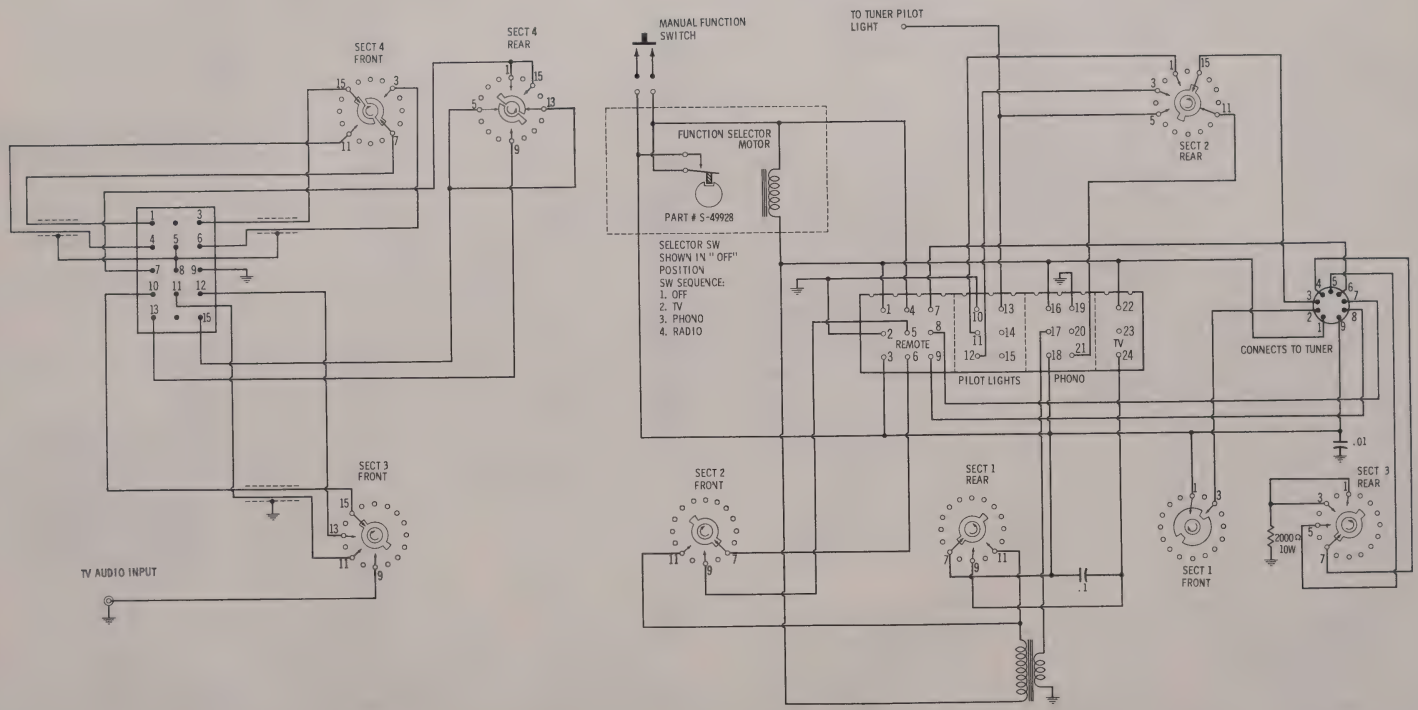
POWER AMP CHASSIS - 7F32

ZENITH CHASSIS 16E24Q, 16F24Q,
3F21, 7F32, 9F27, S-48563, S-50384



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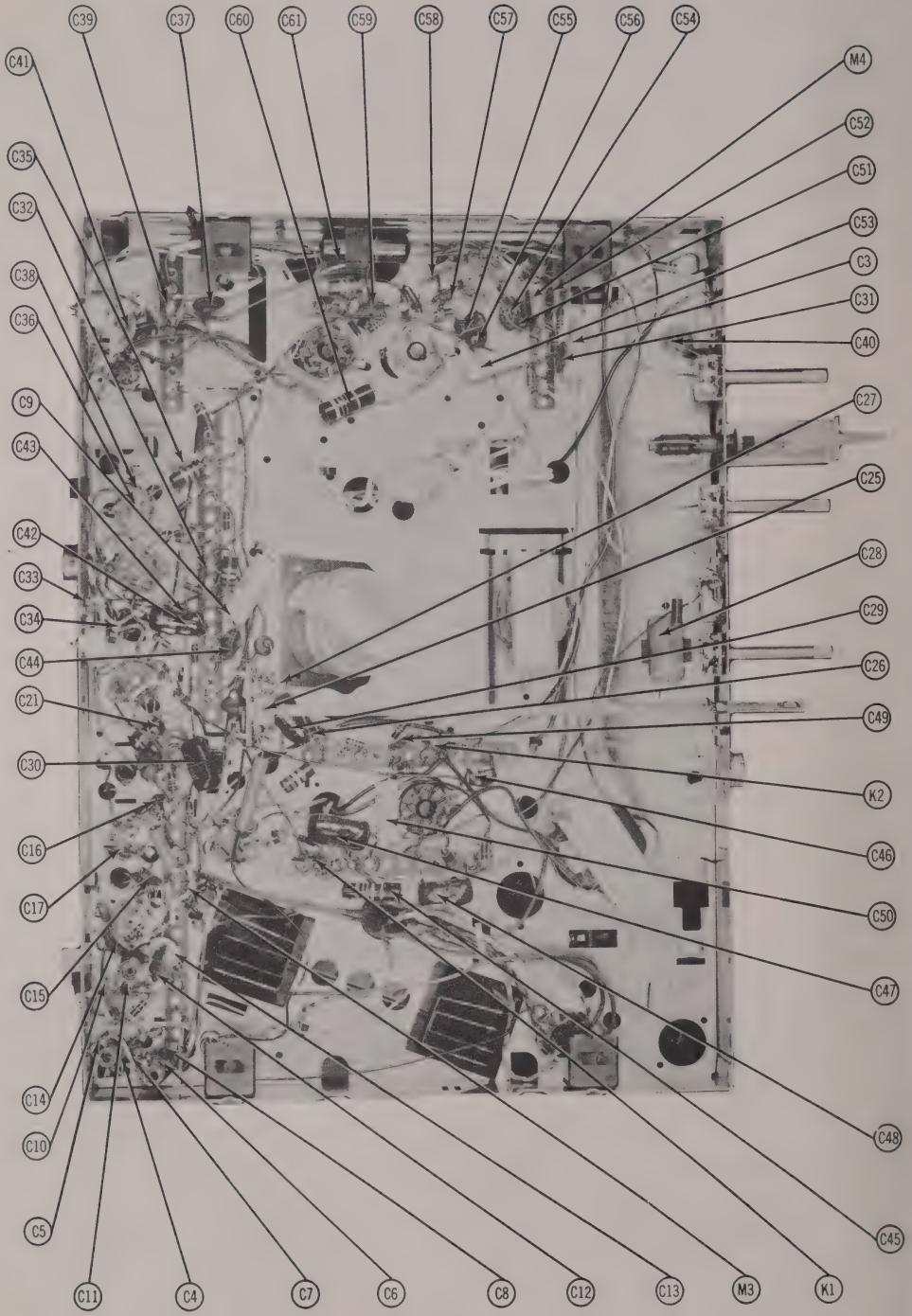
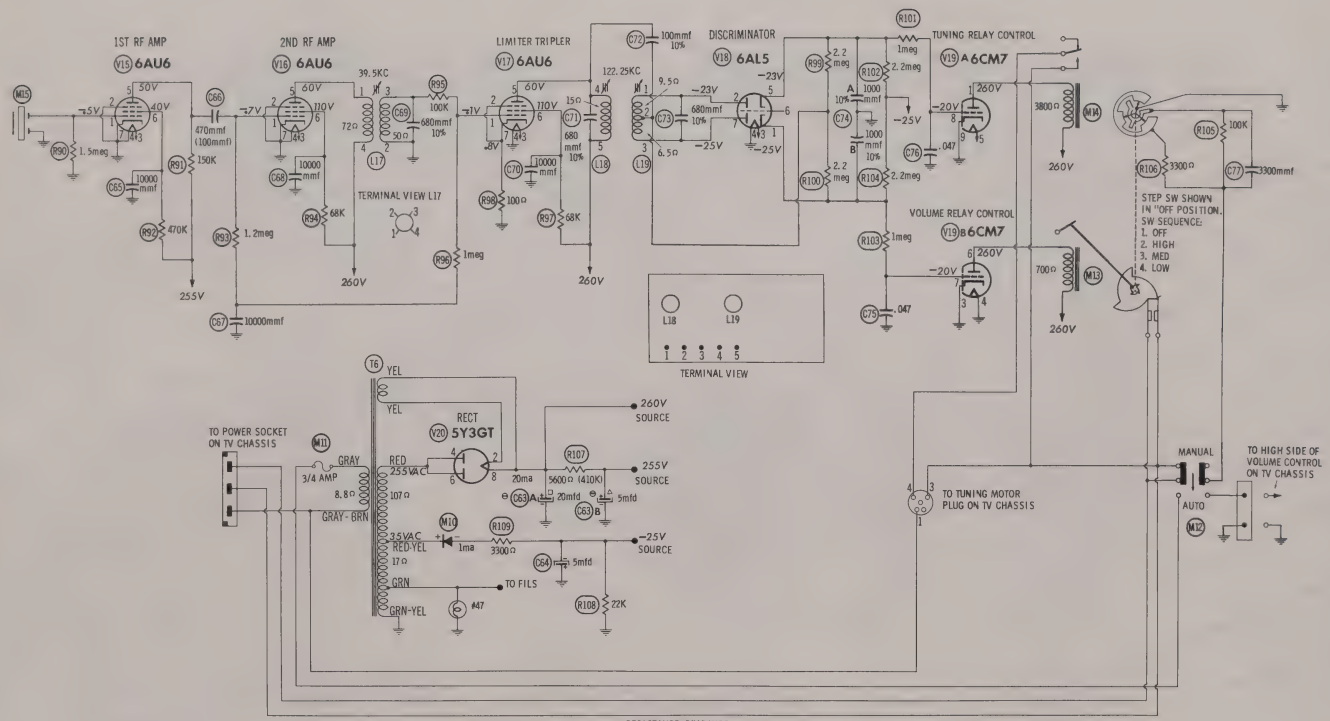
MASTER CONTROL S-50541



TV CHASSIS BOTTOM VIEW - CAPACITOR & MISC. IDENT.



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V15	6AU6	1.5meg	0Ω	.1Ω	0Ω	††155K	††475K	0Ω		
V16	6AU6	2.3meg	0Ω	.1Ω	0Ω	††70Ω	††68K	0Ω		
V17	6AU6	100K	100Ω	.1Ω	0Ω	††15Ω	††68K	100Ω		
V18	6AL5	1.8meg	2.5meg	.1Ω	0Ω	1.8meg	NC	2.5meg		
V19	6CM7	††3800Ω	TP	0Ω	.1Ω	0Ω	††700Ω	3meg	3meg	0Ω
V20	5Y3GT	NC	¶ INF	NC	124Ω	NC	124Ω	NC	¶ INF	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
†† MEASURED FROM PIN 8 OF V20. NC NO CONNECTION TP TIE POINT

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REMOTE CONTROL RECEIVER S-48563

TUNER ALIGNMENT INSTRUCTIONS

175-138

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VHF OSCILLATOR ALIGNMENT

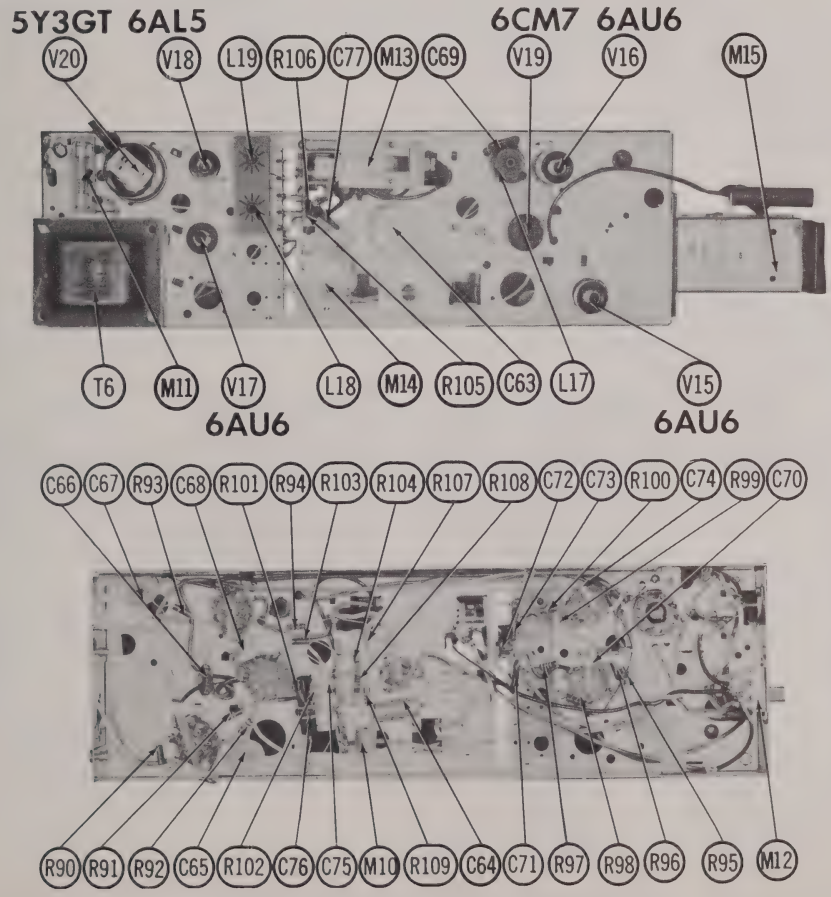
Individual channel adjustment screws are accessible one at a time, thru a hole in the back of the tuner, as the channel selector is rotated. Set the Fine Tuning to the center of its range and switch to channel to be adjusted. Adjust for best picture and sound.

VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a 2.5 volt bias supply to point ⓣ. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	50-300Ω Matching Trans.	Across VHF antenna terminals thru matching transformer.	69MC (10MC Swp)	67.25MC 71.75MC	4	Vert. Amp. thru 10K to point ⓤ. Low side to chassis.	A201, A202, A203	Adjust for maximum gain and symmetry of response similar to Fig. 201 with markers as shown.
2.	"	"	201MC (10MC Swp)	199.25MC 203.75MC	"	"	A204, A205	Adjust for maximum gain and symmetry of response similar to Fig. 201. with markers as shown. Repeat steps 1 and 2 until best overall symmetry is obtained.

FIG. 201



REMOTE CONTROL RECEIVER S-48563

ZENITH CHASSIS 16E24Q, 16F24Q, 3F21, 7F32, 9F27, S-48563, S-50384

FOLDER 2

TUNER ALIGNMENT INSTRUCTIONS
175-136

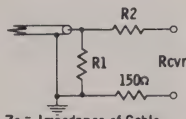
PRE-ALIGNMENT INSTRUCTIONS

The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201 thru A203 ... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2525
A216 thru A227 ... GENERAL CEMENT #8607, 9291
WALSCO #2520, 2522, 2523, 2524, 2537

VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a 2.5 volt bias supply to point ⊕. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Fig. 201	Across antenna terminals thru matching transformer (Fig. 201).	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point ⊕. Low side to chassis.	A201, A202, A203	Adjust A201 and A202 for maximum amplitude and symmetry with markers as shown in Fig. 202. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A203 to obtain MINIMUM response on the scope.
2.	"	"	213MC	211.25MC 215.75MC	13	"	A204	Adjust for maximum amplitude of response similar to Fig. 202. Adjust by expanding or compressing coil turns.
			207MC	205.25MC 209.75MC	12		A205	
			201MC	199.25MC 203.75MC	11		A206	
			195MC	193.25MC 197.75MC	10		A207	
			189MC	187.25MC 191.75MC	9		A208	
			183MC	181.25MC 185.75MC	8		A209	
			177MC	175.25MC 179.75MC	7		A210	
			85MC	83.25MC 87.75MC	6		A211	
			79MC	77.25MC 81.75MC	5		A212	
			69MC	67.25MC 71.75MC	4		A213	
			63MC	61.25MC 65.75MC	3		A214	
			57MC	55.25MC 59.75MC	2		A215	



Zo = Impedance of Cable

Zo	R1	R2
50Ω	56Ω	120Ω
75Ω	82Ω	110Ω

FIG. 201

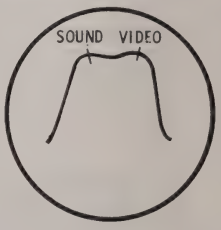


FIG. 202

VHF OSCILLATOR ALIGNMENT

Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Fig. 201	Across antenna terminals thru matching transformer (Fig. 201).	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across Video Detector load.	A216	Adjust to place sound marker in trap notch as in Fig. 203. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A217	
			201MC	199.25MC 203.75MC	11		A218	
			195MC	193.25MC 197.75MC	10		A219	
			189MC	187.25MC 191.75MC	9		A220	
			183MC	181.25MC 185.75MC	8		A221	
			177MC	175.25MC 179.75MC	7		A222	
			85MC	83.25MC 87.75MC	6		A223	
			79MC	77.25MC 81.75MC	5		A224	
			69MC	67.25MC 71.75MC	4		A225	
			63MC	61.25MC 65.75MC	3		A226	
			57MC	55.25MC 59.75MC	2		A227	

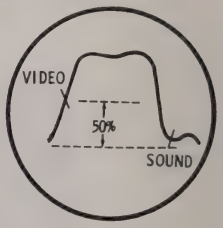
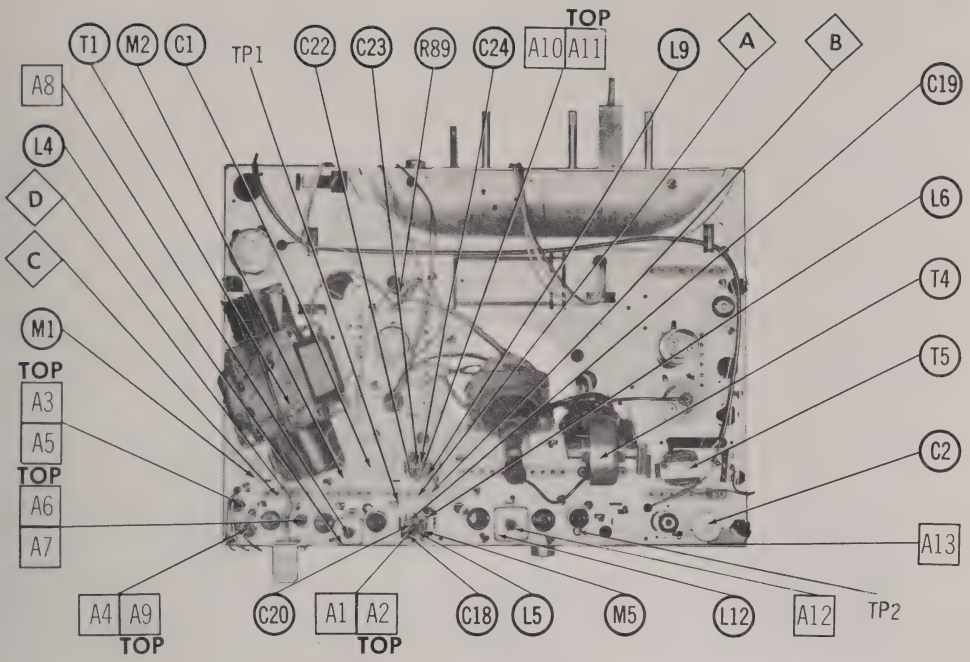
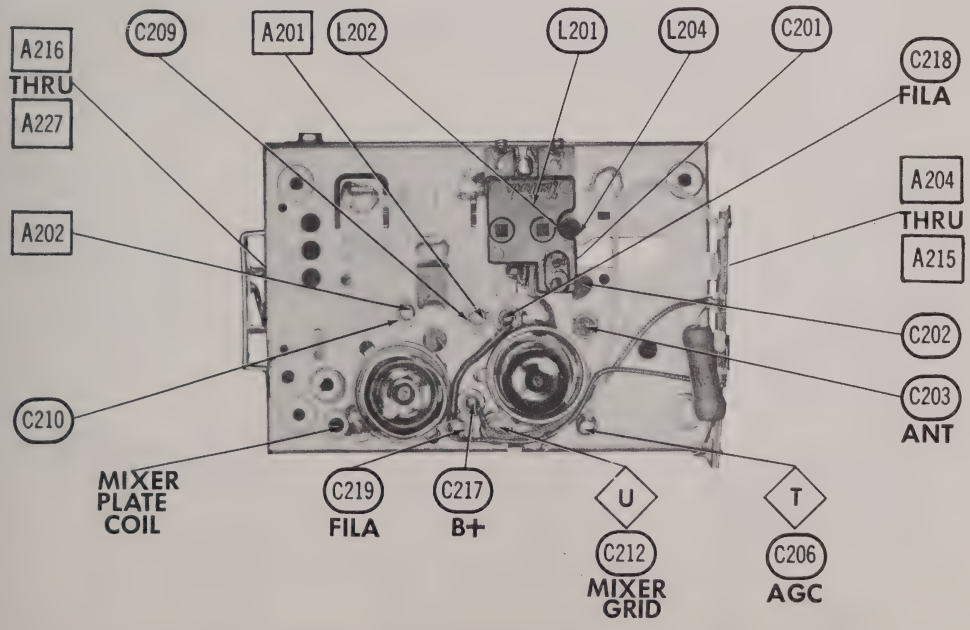


FIG. 203

TP1 0V 3rd IF GRID
TP2 0V AUDIO DET GRID

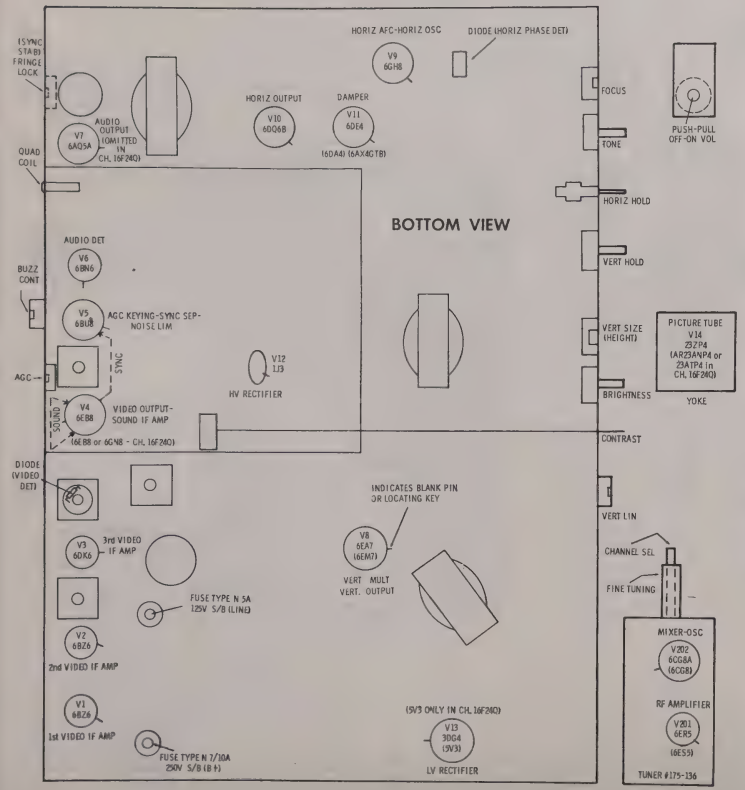


TV CHASSIS - TOP VIEW



VHF TUNER 175-136 - TOP VIEW

TV
TUBE PLACEMENT CHART

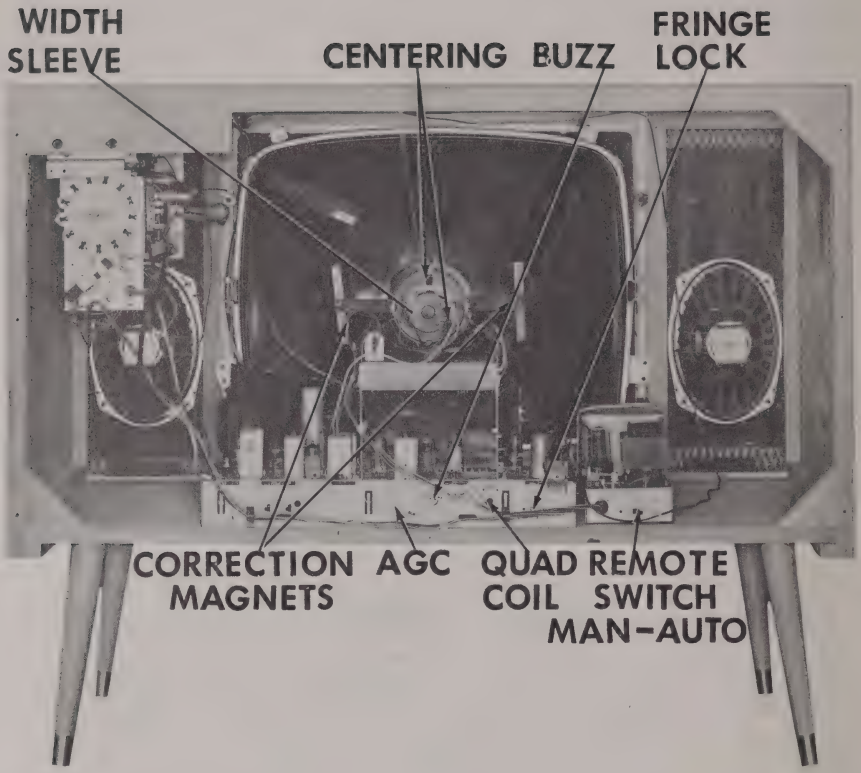


TV
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	1.3meg	1550Ω	.1Ω	0Ω	▪ 220Ω	▪ 220Ω	1500Ω		
V2	6BZ6	40K	INF	.1Ω	0Ω	† 280Ω	† 280Ω	INF		
V3	6DK6	.1Ω	120Ω	.1Ω	0Ω	† 8200Ω	† 8200Ω	0Ω		
V4	6EB8	0Ω	100K	†470K	.1Ω	0Ω	15Ω	3000Ω	† 27K	† 7000Ω
V5	6BU8	• 6000Ω	† 22K	• 700K	.1Ω	0Ω	100K	• 350K	† 72K	† 8.2meg
V6	6BN6	• 400Ω	.2Ω	.1Ω	0Ω	† 27K	3.7Ω	† 390K		
V7	6AQ5A	• 10K	680Ω	.1Ω	0Ω	† 1800Ω	† 1000Ω	NC		
V8	6EA7	2.2meg	† 420Ω	• 1100Ω	• 700K	• †4.5meg	0Ω	0Ω	.1Ω	
V9	6GH8	† 100K	100K	† 47K	0Ω	.1Ω	† 120K	28Ω	0Ω	1.4meg
V10	6DQ6B	TP	.1Ω	TP	† 10K	1meg	NC	0Ω	0Ω	TOP CAP † 8Ω
V11	6DE4	NC	NC	1.2meg	NC	† 60Ω	NC	0Ω	.1Ω	
V12	1J3		PINS	1 THRU 8	HAVE	INFINITE	RESISTANCE			TOP CAP † 300Ω
V13	3DG4	¶ 35K	TP	¶ 35K	TP	18Ω	TP	20Ω	TP	
V14	23ZP4	.1Ω	0Ω	Pin 6 • † 500K	Pin 10 200K	Pin 11 • 160K	Pin 12 0Ω			
V201	6ER5	0Ω	3meg	0Ω	.1Ω	† 4300Ω	0Ω	0Ω		
V202	6CG8A	3900Ω	† 18K	0Ω	0Ω	.1Ω	† 3300Ω	† 36K	0Ω	220K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM PIN 3 OF V13.
† MEASURED FROM PIN 3 OF V11.
▪ MEASURED FROM PIN 2 OF V2.

NC NO CONNECTION
TP TIE POINT



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

The Horizontal Hold is equipped with a stop which limits rotation to approximately 270° with the knob on the shaft. To adjust, remove the knob and adjust by turning the shaft until the picture is synchronized to the point where it is virtually impossible to disrupt horizontal synchronization when switching from channel to channel. Install the knob with its pointer centered between stops.

DISASSEMBLY INSTRUCTIONS

CHASSIS AND PICTURE TUBE ASSEMBLY REMOVAL - MODEL F3344E

1. Remove 8 wood screws holding rear cover.
2. Remove rear cover.
3. Remove one push-on type knob at front.
4. Remove VHF Tuner leads, remote control receiver plug and muting switch leads , and speaker leads.
5. Remove 2 screws holding switch and volume control bracket.
6. Remove 4 chassis bolts. Remove 6 screws holding picture tube mounting bracket to cabinet.
7. Remove chassis (with picture tube).
8. Remove 3 remote control receiver chassis bolts; remove remote control receiver.
9. Remove 2 screws at rear of VHF Tuner assembly bracket and pull assembly straight out.
10. Disconnect microphone plug.

PICTURE TUBE REMOVAL

It is necessary to remove the chassis for picture tube removal.

PHOTOFACT® Folder

**PRODUCTION CHANGE
BULLETIN 258**

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 1 IN SET 510

Magnavox Chassis U33-01-00, U33-02-00, U33-03-00, U33-04-00, U33-05-00, U33-06-00, V33-01-00, V33-02-00, V33-03-00, V33-04-00, V33-05-00, V33-06-00 were covered in PHOTOFACT Folder 1 - Set 510.

Chassis U33-07-00, U33-10-10, U33-11-10, V33-07-00, V33-10-10, V33-11-10 are electrically similar except for the following changes.

Chassis U/V33-07-00

TO ELIMINATE MOTORBOATING

A 68Ω ½ watt 10% Resistor is added from Pin 5 of V8 to the junction of C37 & R44.

PICTURE TUBE CHANGE

The picture tube is changed from a Type 21DLP4 to a Type 23ASP4.

DEFLECTION YOKE CHANGE

When the 23ASP4 picture tube is used, the deflection yoke is changed to Part #700703-2.

Chassis U/V33-10-10, U/V33-11-10

PICTURE TUBE CHANGE

The picture tube is changed from a Type 21DLP4 to a Type 27XP4. Pin 2 of the picture tube is connected to ground, C28 and R30 are disconnected from the picture tube.

COMPONENTS ADDED

A 68Ω ½ watt 10% Resistor is added from Pin 5 of V8 to the junction of C37 and R44 (Ch. U/V33-10-10).

A RF Choke (Part #360620-1) is added from Pin 6 of V4 to the junction of C25 and R28.

A 2.5meg Focus Control (Part #220146-18) is added. One side of this control connects to ground. The center arm is connected to Pin 6 of the picture tube. The other side of the control is connected to B Boost.

A 270K ½ watt 10% Resistor is added from Pin 10 of the picture tube to B Boost.

A 1000Ω ½ watt 10% Resistor is added from Pin 4 of V11 to R68.

A 47mmf Capacitor is added between Pins 3 and 7 of the yoke socket.

A .0033 mfd@ 600Volt Capacitor is added from Pin 10 of the picture tube to the black lead of T3 (Vertical Output Transformer).

COMPONENT CHANGES

T3 (Vertical Output Transformer) is changed to Part #320278-2. This transformer uses four leads instead of 3. The blue lead connects to Pin 1 of V9, the red lead connects to Pin 1 of the yoke socket, the green lead connects to Pin 8 of the yoke socket, the black lead connects to Pin 10 of the picture tube through a .0033 mfd@ 600volt Capacitor.

MAGNAVOX CHASSIS U33-07-00, U33-10-10, U33-11-10, V33-07-00, V33-10-10, V33-11-10

PRODUCTION CHANGE
BULLETIN 258

(Continued On The Reverse Side)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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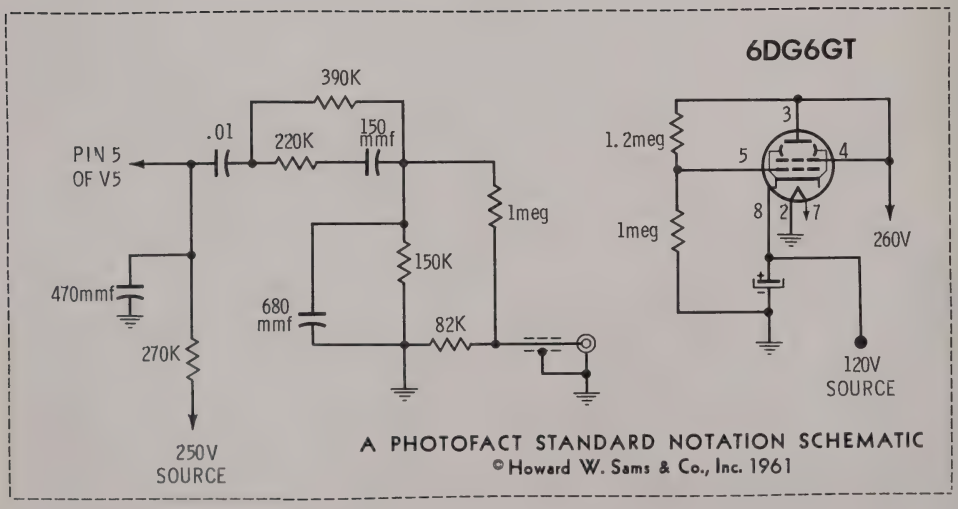
	R74 is omitted. With this change Pin 8 of V11 (6DQ6A) is connected to ground. R31 is increased from 270K to 390K. R32 is increased from 270K to 390K. T4 (Deflection Yoke) is changed to Part #700703-4. T5 (Horizontal Output Transformer) is changed to Part #360863-1.
Chassis U/V33-11-10	CIRCUIT CHANGE This chassis may use an alternate audio circuit. A partial schematic diagram showing this circuit is given in this bulletin.



SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 11 IN SET 487

Silvertone Model 28 (Ch. 132.48900) was covered in PHOTOFACT Folder 11-Set 487.

Model 1028 (Ch. 132.48903) is electrically similar except for the following changes.

COMPONENT CHANGES

R9 is omitted.

C24 is omitted.

R17 is increased from 68Ω to 82Ω.

R15 is decreased from 12K to 10K.

R20 is increased from 33K to 82K.

R24 is increased from 33K to 680K.

C33 is increased from 470 mmf to 800 mmf.

A 330K $\frac{1}{2}$ watt Resistor is added from the junction of C34 and R24 to ground.

R21 is omitted.

C35 is omitted.

R37, R38 are omitted and replaced by direct wiring.

C30 is decreased from 470 mmf to 47 mmf.

R14 is replaced by an 82K $\frac{1}{2}$ watt Resistor and a 12K $\frac{1}{2}$ watt Resistor wired in series. With this change a 47K $\frac{1}{2}$ watt Resistor is added from the junction of the above resistors to Contact #9, front section of M6 Function Selector.

A 200 mmf Capacitor is added from the junction of C6 and R3 to ground.

L2 is changed to Part #46971-2.

L3 is changed to Part #46971-5.

M3 (FM Tuner) is changed to Part #46969-2.

M6 (Function Selector) is changed to Part #46967-5.

SILVERTONE MODEL 1028 (CH. 132.48903)

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 5 IN SET 509

Capitol Model 954S was covered in PHOTOFACT Folder 5 - Set 509.

The following changes are made by the manufacturer during late production.

TO REDUCE HUM

R33 is increased from 100K to 1 meg.

R36 is increased from 100K to 1 meg.

C37 is decreased from .05 mfd to .003 mfd.

C39 is decreased from .05 mfd to .003 mfd.

TO INCREASE TUNER OUTPUT LEVEL

V9 is changed from a Type 12AU7A to a Type 12AT7.

CAPITOL MODEL 954S

PHOTOFACT® Folder

AIRLINE MODELS
GAA-2800A, -2801A, -2802A

AIRLINE MODELS
GAA-2800A, -2801A, -2802A

MODEL GAA-2800A

AIRLINE MODELS
GAA-2800A, -2801A, -2802A

TRADE NAME	Airline Models GAA-2800A, GAA-2801A, GAA-2802A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago 7, Illinois
TYPE SET	AC Operated 5 Tube Stereo Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles RATING 51 Watts, .5 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER – SEE V-M 1201 – PHOTOFACT SET 436 FOLDER 18
OR RECORD CHANGER MANUAL RC-12

SET 528 FOLDER 4

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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KT421

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE
V1	Channel 1 AF Amp.	6AU6A
V2	Channel 1 Output	6BQ5
V3	Channel 2 AF Amp.	6AU6A
V4	Channel 2 Output	6BQ5
V5	Rectifier	6X4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	350	1020	AFH3-43	C0340	FP376.8	TMT-3742	TVL-3785	
B	■40	350							
C	▲10	350							
C2	100	15NP		PRS7340	BR10015	TCN425		TVANS-1207.1*	
C3	100	15NP		PRS7340	BR10015	TCN425		TVANS-1207.1*	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C5	3300		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C6	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C7	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C8	3300		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C9	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22

CONTROLS

ITEM No.	RATING RESIST-ANCE	RATING WATTS	REPLACEMENT DATA AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	5meg		438	B-88			FA56A	Loudness, Channel 2
B	5meg			SR-88			RU56A	Loudness, Channel 1
C	Shaft			Not Req.			CS3500	
R2A	500K		436	B-60			FA55A	Balance, Channel 1
B	500K			SR-613			RU55R	Balance, Channel 2
C	Shaft			Not Req.			CS3500	
R3A	2meg		437	B-76	AD47-2meg-Z		FA26A	Treble, Channel 2
B	2meg			SR-76	Not Req.		RU26A	Treble, Channel 1
C	Shaft			Not Req.	KSS-3		CS3500	
R4A	5meg		439	B-87	AD47-5meg-S		FA56L	Bass, Channel 2
B	5meg			SR-87	Not Req.		RU56L	Bass, Channel 1
C	Shaft			Not Req.	KSS-3		CS3500	

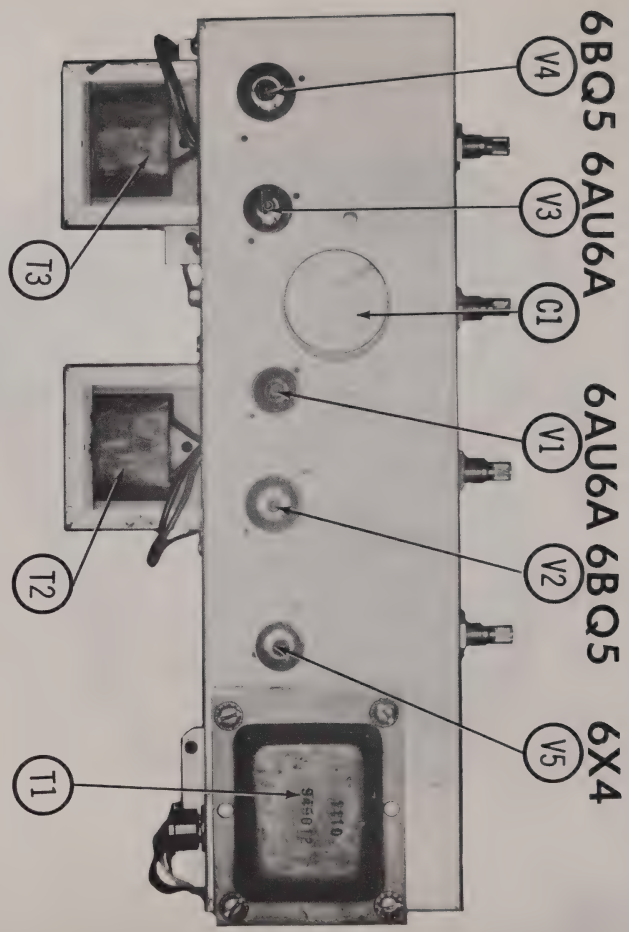
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R5	270K			
R6	10meg			
R7	270K			
R8	27K			
R9	1500Ω			
R10	68K			
R11	220Ω 1W			
R12	270K			

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R13	10meg			
R14	270K			
R15	68K			
R16	1500Ω			
R17	220Ω 1W			
R18	100K			
R19	4700Ω 1W			
R20	130Ω 2W			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	AIRLINE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V Ⓐ .5A	520VCT Ⓐ .075A DC	6.3VCT Ⓐ 2.7A	1110	P-3048	PC-8404 ①	24R13U ①	R-110A ①	① Mounting difference. Tape 5V winding.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	AIRLINE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6000Ω	3-4Ω	1217	A-2935	A-3824	22S62	S-5X	
T3	6000Ω	3-4Ω	1217	A-2935	A-3824	22S62	S-5X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	AIRLINE PART No.	QUAM PART No.	
SP1	6"	PM	3-4Ω	2654	6A15	
SP2	12"	PM	6-8Ω	2653	12A6AZ8	
SP3	6"	PM	3-4Ω	2654	6A15	

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA								NOTES
	AIRLINE PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M1	60-79	CRA57X * (LP)	86-TS-TB	N7-7 *	96T	Not Req.	12TH-S	Not Req.	
		CRA57 * (STD)		N8-3 *					

CABINETS & CABINET PARTS

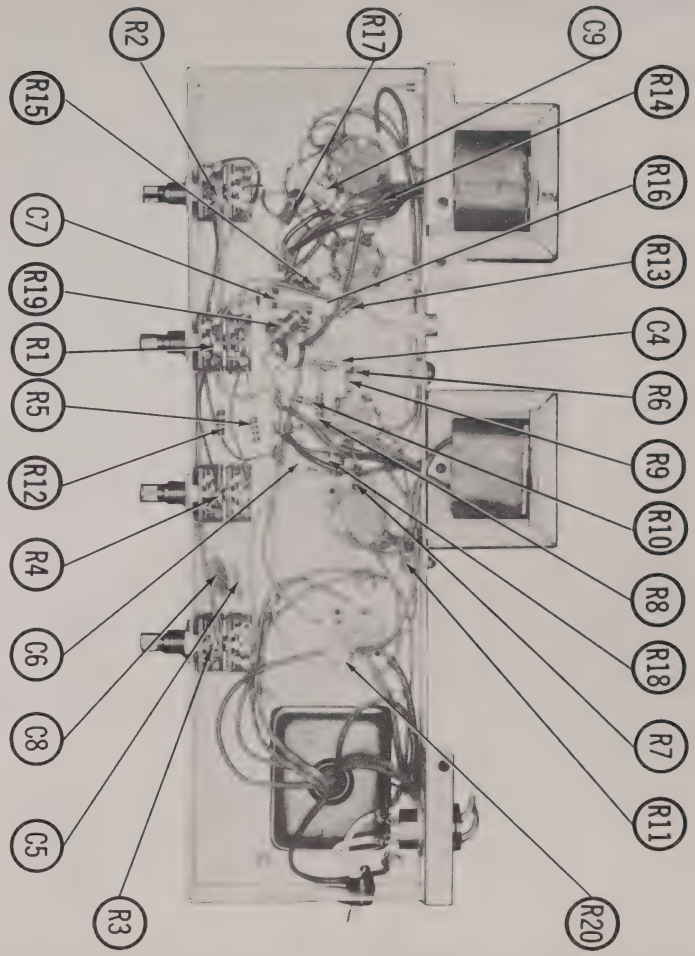
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

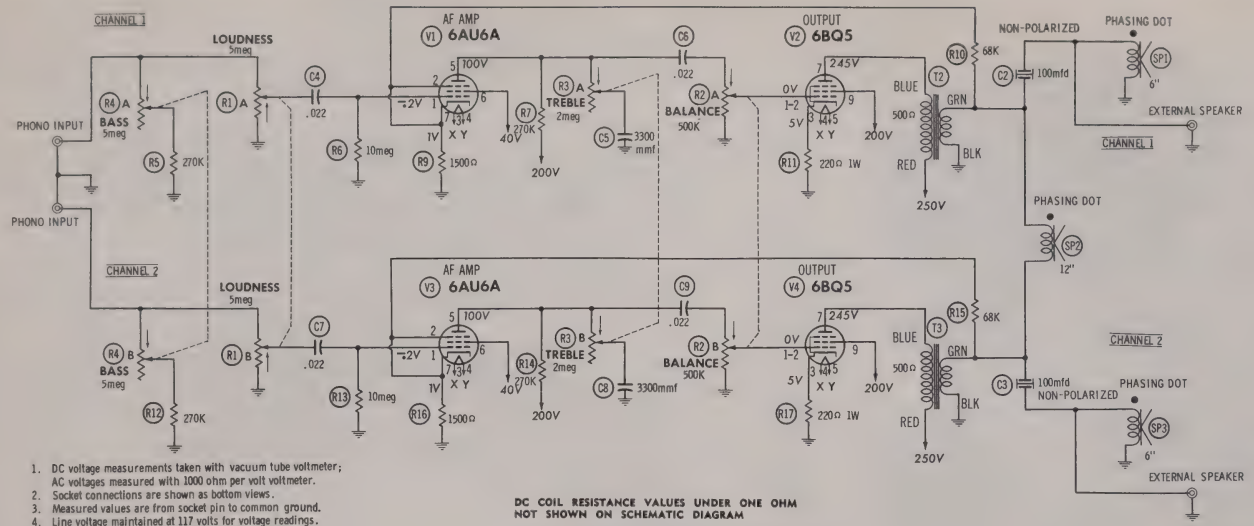
NAME	PART NO.	DESCRIPTION
Knob	2462	All Controls

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—BOTTOM VIEW





1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

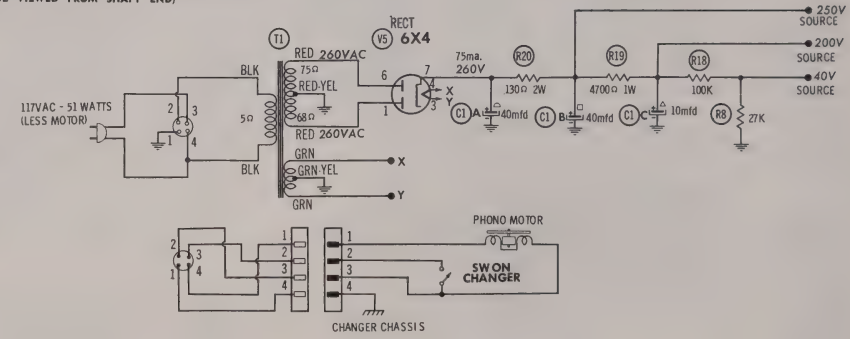
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AU6A	10meg	1500Ω	.1Ω	.1Ω	†275K	†50K	1500Ω		
V2	6BQ5	NC	•300K	220Ω	.1Ω	.1Ω	NC	†630Ω	NC	†4800Ω
V3	6AU6A	10meg	1500Ω	.1Ω	.1Ω	†275K	†50K	1500Ω		
V4	6BQ5	NC	•300K	220Ω	.1Ω	.1Ω	NC	†630Ω	NC	†4800Ω
V5	6X4	68Ω	NC	.1Ω	.1Ω	TP	75Ω	¶		

• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5. NC NO CONNECTION TP TIE POINT



A PHOTOFACT STANDARD NOTATION SCHEMATIC
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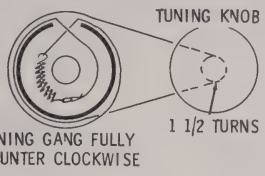
AIRLINE MODELS
GAA-2800A, -2801A, -2802A

PHOTOFACT® Folder with CIRCUITRACE®

CONTINENTAL
MODEL TR-632

CONTINENTAL
MODEL TR-632

TUNING DRIVE CORD STRINGING



FRONT VIEW

CONTINENTAL
MODEL TR-632

TRADE NAME	Continental Model TR-632
IMPORTER	Continental Merchandise Co., Inc., 236 Fifth Ave., New York 1, N. Y.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	9 Volts DC
RATING	4 MA @ 9 Volts DC (No Signal, Min. Volume)
	10MA @ 9 Volts DC (Signal, Normal Volume)
TUNING RANGE—BROADCAST	540 — 1600KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1, A2, A3, A6....GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538
A4, A5.....GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1600KC	1600KC	"	A4, A5	"
3.	"	600KC	600KC	"	A6, A7	Adjust for maximum output. Repeat Steps 2 and 3.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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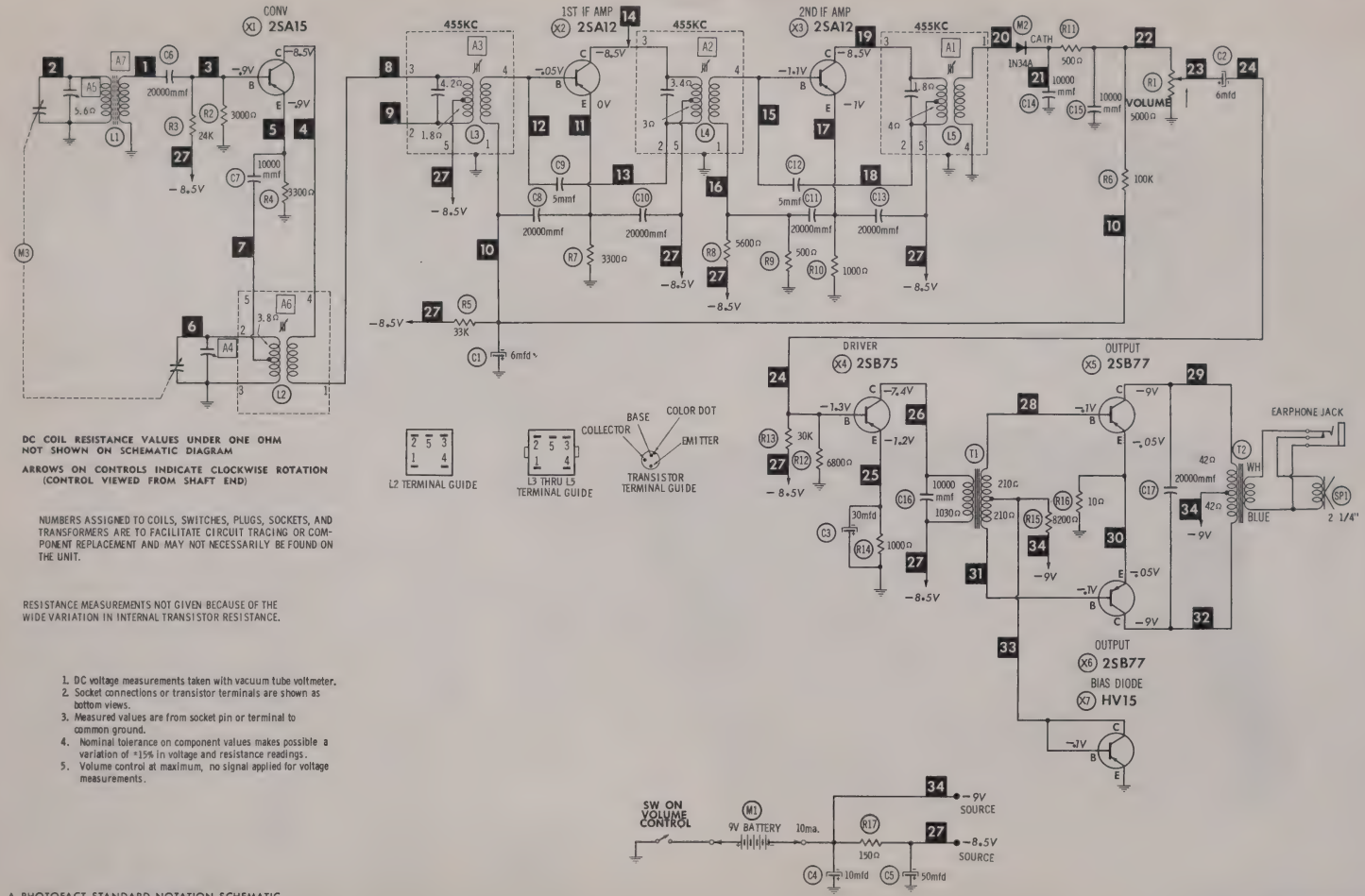

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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CONTINENTAL MODEL TR-632

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2SA15	Converter				PNP
X2	2SA12	1st IF Amplifier				PNP
X3	2SA12	2nd IF Amplifier				PNP
X4	2SB75	Driver	2N406			PNP
X5	2SB77	Output	2N408			PNP
X6	2SB77	Output	2N408			PNP
X7	HV15	Bias Diode	1N2326	1N295		

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	Continental PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	6	6							
C2	6	6							
C3	30	6							
C4	10	6							
C5	50	10							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C7	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C8	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C9	5		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-4R7	CNO-547	10TCC-V50
C10	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C11	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C12	5		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-4R7	CNO-547	10TCC-V50
C13	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C14	10000		C80V103AM	DM-103	H-05S10		TA-110	TG-S10
C15	10000		C80V103AM	DM-103	H-05S10		TA-110	TG-S10
C16	10000		C80V103AM	DM-103	H-05S10		TA-110	TG-S10
C17	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Continental PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/4		B16-214				Volume & Switch

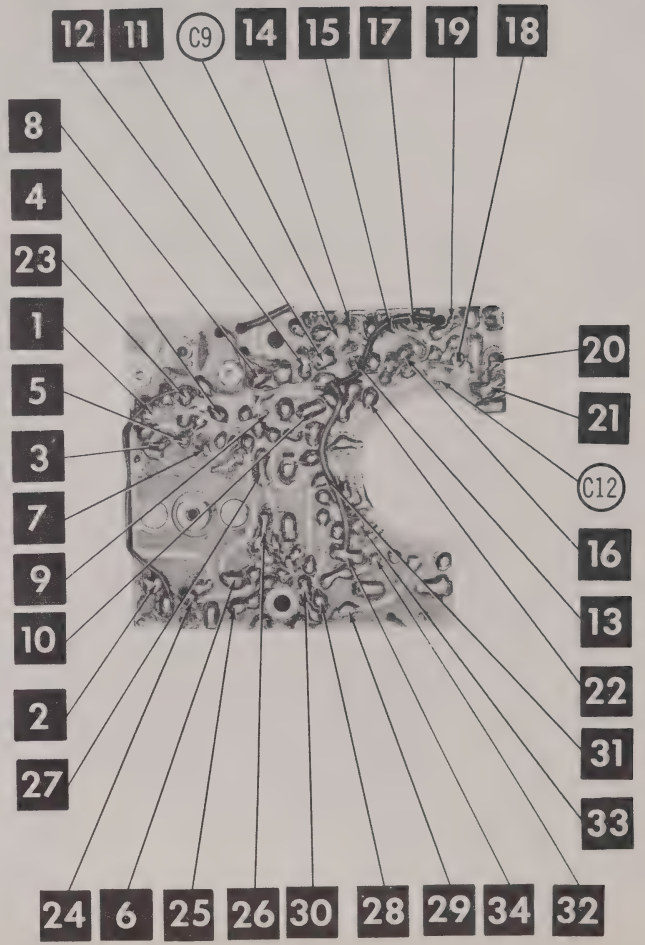
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	3000Ω				R10	1000Ω			
R3	24K				R11	500Ω			
R4	3300Ω				R12	6800Ω			
R5	33K				R13	30K			
R6	100K				R14	1000Ω			
R7	3300Ω				R15	8200Ω			
R8	5600Ω				R16	10Ω			
R9	500Ω				R17	150Ω			

PRINTED BOARD

A Howard W. Sams CIRCUITRACE* Photo



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		Continental PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	Loopstick					
L2	Osc.					
L3	1st IF					
L4	2nd IF					
L5	3rd IF					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	Continental PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.6	1						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	Continental PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	1500Ω CT	6-8Ω						

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Continental PART No.	QUAM PART No.	
SP1	2 1/4"	PM	6-8Ω			

BATTERIES

ITEM No.	VOLTAGE	Continental	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
		PART No.	"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V	BL-006P		2U6		216		M-1604	

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		Continental PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N34A			1N34A	1N34A	Detector (Pigtail)

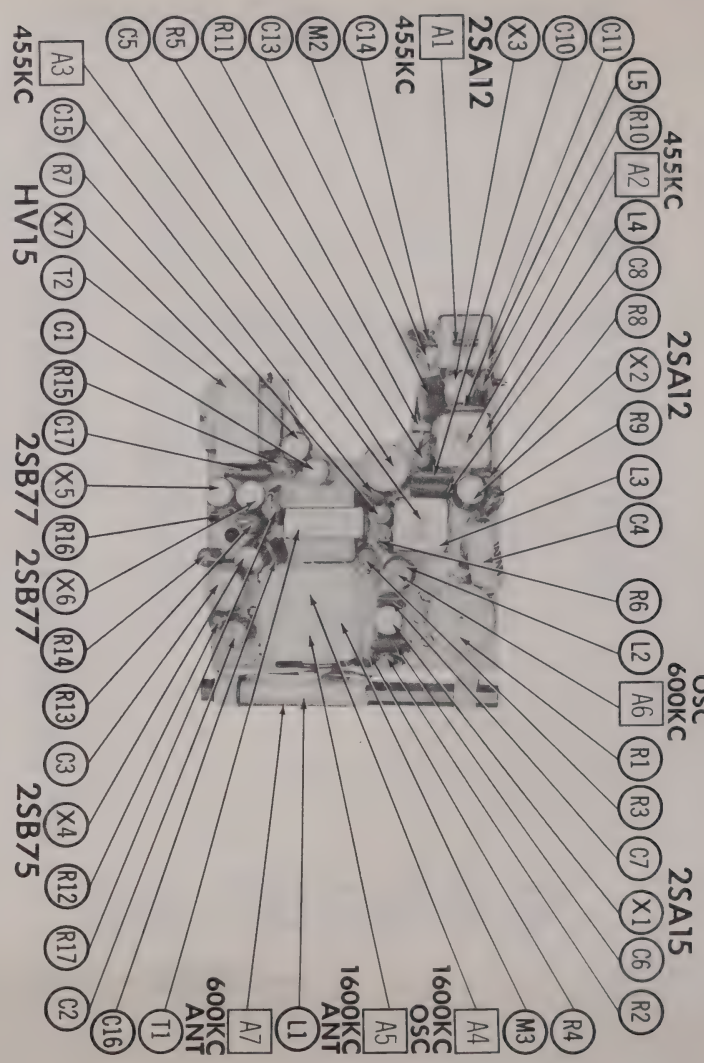
MISCELLANEOUS

ITEM No.	PART NAME	Continental PART No.	NOTES
M3	Tuning Cap.		2 Gang

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



PHOTOFACT® Folder

GENERAL ELECTRIC MODEL G7600

GENERAL ELECTRIC
MODEL G7600

GENERAL ELECTRIC
MODEL G7600

TRADE NAME	General Electric Model G7600
MANUFACTURER	General Electric Co., Radio Receiver Dept., 2200 N. 22nd Street, Decatur, Illinois
TYPE SET	AC Operated 11 Tube Stereo Amplifier
POWER SUPPLY	105 – 125 Volts AC, 60 Cycles RATING 110 Watts, 1 Amp. @ 117 Volts AC

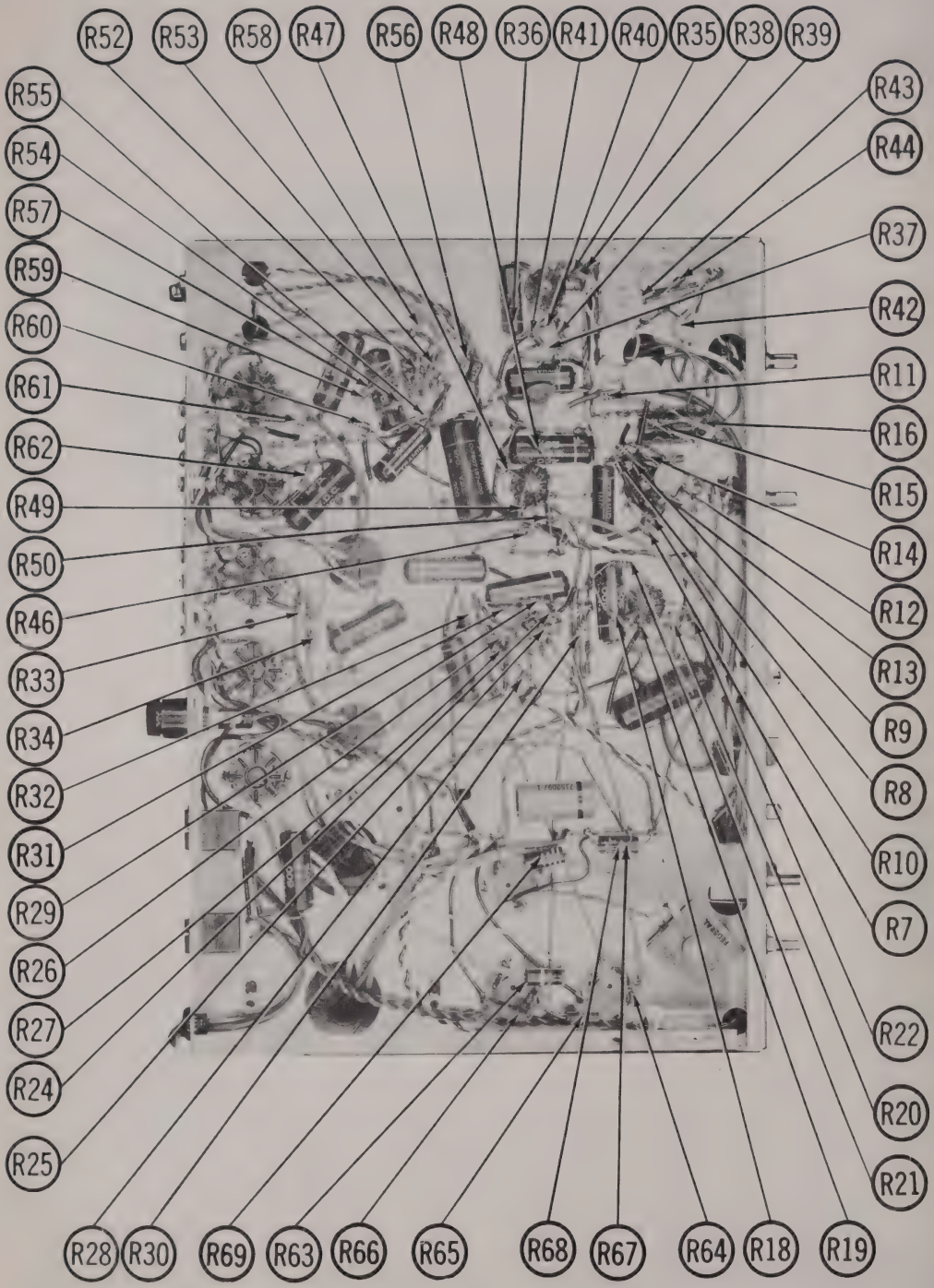
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

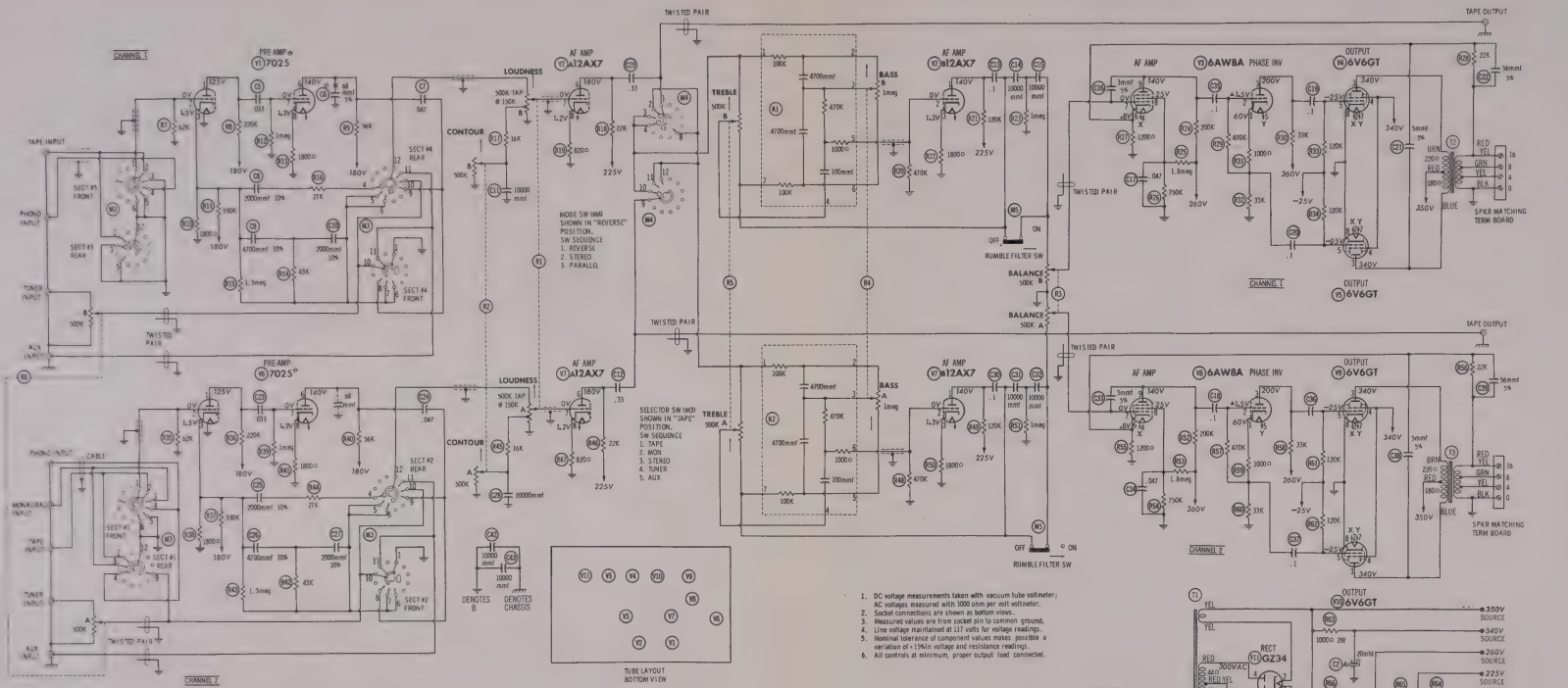
KV410

DATE 4 – 61 SET 528 FOLDER 6

SET 528 FOLDER 6



CHASSIS BOTTOM VIEW - RESISTOR IDENT.



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	7025	*245K	62K *Ω	1800Ω	0Ω	20Ω	*82K	1meg	1800Ω	NC
V2	12AX7	*130K	350K	1800Ω	20Ω	25Ω	*33K	0Ω	820Ω	NC
V3	6AW8A	34K	500K	*40K	.1Ω	.1Ω	1200Ω	250K	*800K	*200K
V4	6V6GT	NC	.1Ω	*220Ω	*1000Ω	120K	NC	.1Ω	0Ω	
V5	6V6GT	NC	.1Ω	*180Ω	*1000Ω	120K	TP	.1Ω	0Ω	
V6	7025	*245K	62K *Ω	1800Ω	0Ω	20Ω	*82K	1meg	1800Ω	NC
V7	12AX7	*130K	350K	1800Ω	20Ω	25Ω	*33K	0Ω	820Ω	NC
V8	6AW8A	34K	500K	*40K	.1Ω	.1Ω	1200Ω	250K	*800K	*200K
V9	6V6GT	NC	.1Ω	*220Ω	*1000Ω	120K	NC	.1Ω	0Ω	
V10	6V6GT	NC	.1Ω	*180Ω	*1000Ω	120K	TP	.1Ω	0Ω	
V11	GZ34 5AR4	NC	1	NC	440	NC	440	NC	1	

1 THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
* MEASURED FROM PIN 8 OF V11.
▲ MEASURED FROM CATHODE.
NC NO CONNECTION
▬ MEASURED WITH RUMBLE FILTER OFF.
■ MEASURED IN MON., TUNER OR AUX. POSITION.
TP TIE POINT

@ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

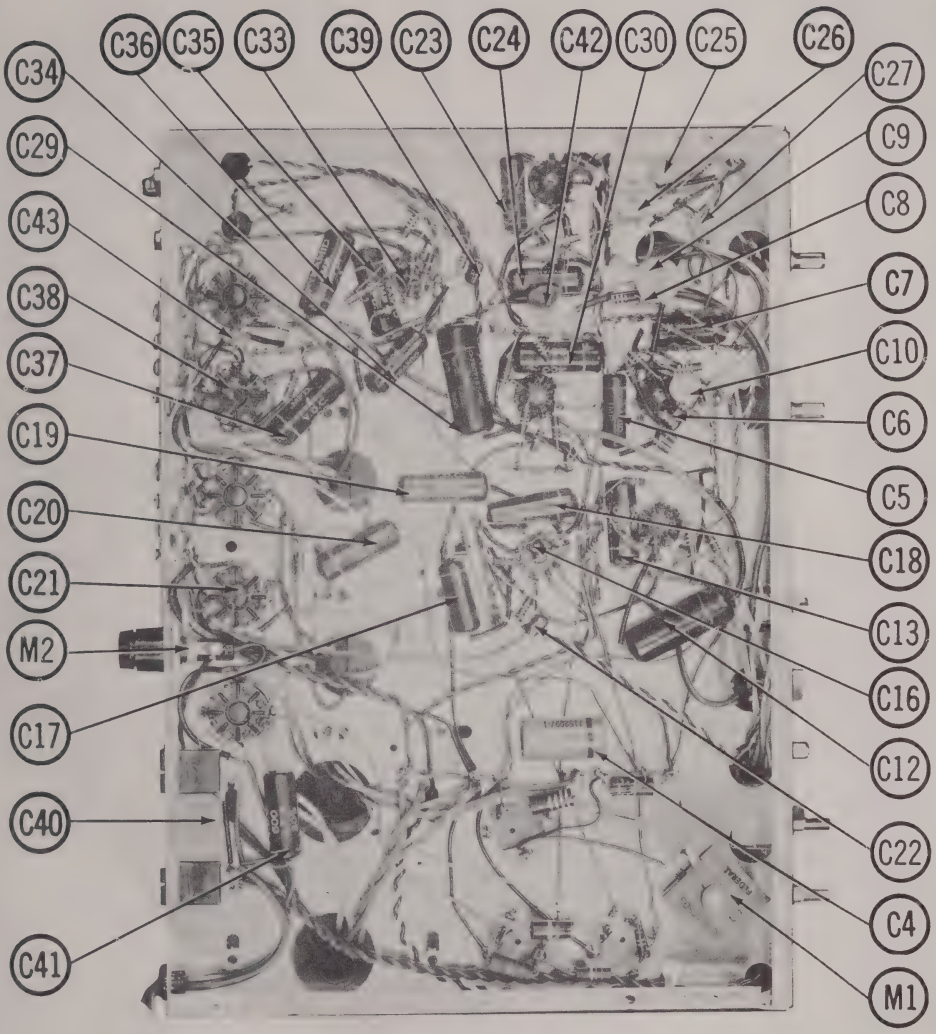
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

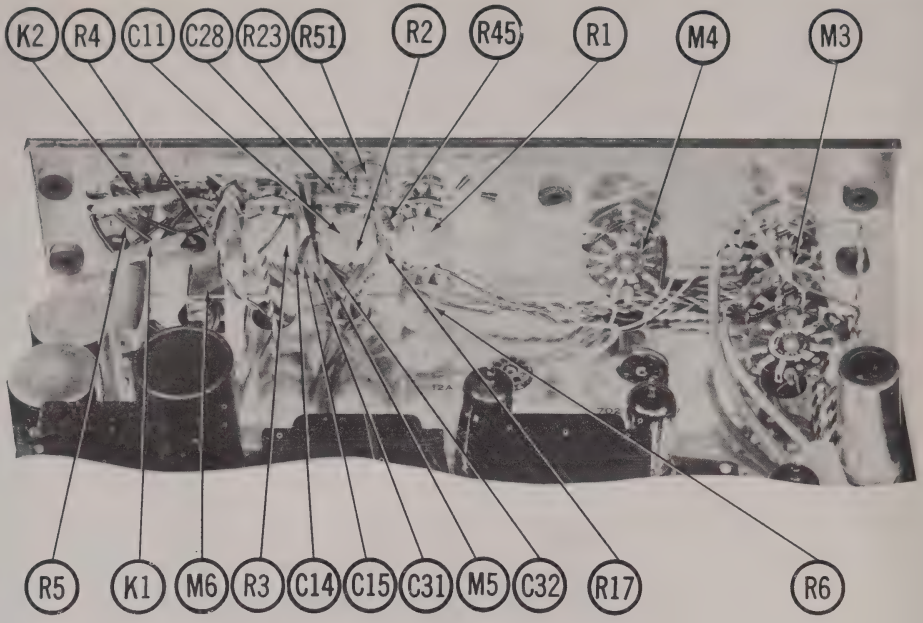
A PHOTOFACT STANDARD NOTATION SCHEMATIC

*Howard W. Sams & Co., Inc. 1961

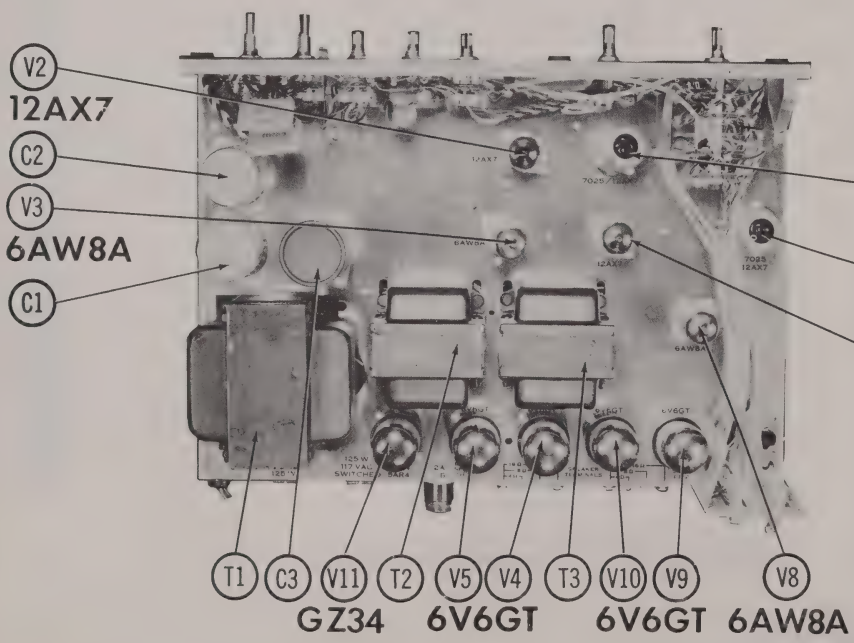
GENERAL ELECTRIC MODEL G7600



CHASSIS BOTTOM VIEW - CAPACITOR & MISC. IDENT.



CONTROL PANEL - REAR VIEW



CHASSIS - TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V1	Channel 1 Preamp.	7025 (12AX7) *
V2	Channel 1 AF Amp.	12AX7
V3	Channel 1 AF Amp. - Phase Inverter	6AW8A
V4	Channel 1 Output	6V6GT
V5	Channel 1 Output	6V6GT
V6	Channel 2 Preamp.	7025 (12AX7) *
V7	Channel 2 AF Amp.	12AX7
V8	Channel 2 AF Amp. - Phase Inverter	6AW8A
V9	Channel 2 Output	6V6GT
V10	Channel 2 Output	6V6GT
V11	Rectifier	GZ34/5AR4

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA G. E. PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	350	ECE-241	AFH2-57	B0450	FP238	TMD-2390	TVL-2764	
B	▲40	350							
C2A	▲20	350	ECE-242	AFH3-38	C0290	FP396	TMT-3739	TVL-3784	
B	▲30	250							
C	■30	250							
C3	1000	30	ECE-237	AFH1-10				TVL-1230	
C4	50	30	ECE-238	PRS1350	BR5015	TC39	TD-50-50	TVA-1308	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	.033 400V		P488N-033	DD-303	DPMS4S33	4DP-2-333	GEM-4133	4PS-S33
C6	68 5%	Note 1	1469-000068	TCZ-68	22R5Q68	CM-19B-680J	CNO-468	MS-468
C7	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C8	2000 10%		DI-2000		PM6D2	CCD-202	GP220	10TS-D20
C9	4700 10%		DI-4700		PM6D47	CCD-472	JL-247	10TS-D47
C10	2000 10%		DI-2000		PM6D2	CCD-202	GP220	10TS-D20
C11	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C12	.33 300V		P488N-33		DPMS4P33	4DP-5-334	GEM-4033	
C13	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C14	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C15	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C16	3 5%			TCZ-3R3	C10V3C	CCTO-3R3	CNO-533	10TCC-V33
C17	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C18	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C19	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C20	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C21	5 5%		1469-000005	TCZ-4R7	22R5V5	VCM-20-050J	CNO-547	MS-55
C22	56 5%		1469-000056	TCZ-56	22R5Q56	CM-19B-560J	CNO-456	MS-456
C23	.033 400V		P488N-033	DD-303	DPMS4S33	4DP-2-333	GEM-4133	4PS-S33
C24	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C25	2000 10%		DI-2000		PM6D2	CCD-202	GP220	10TS-D20
C26	4700 10%		DI-4700		PM6D47	CCD-472	JL-247	10TS-D47
C27	2000 10%		DI-2000		PM6D2	CCD-202	GP220	10TS-D20
C28	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C29	.33 300V		P488N-33		DPMS4P33	4DP-5-334	GEM-4033	
C30	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C31	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C32	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C33	3 5%			TCZ-3R3	C10V3C	CCTO-3R3	CNO-533	10TCC-V33
C34	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C35	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C36	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C37	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C38	5 5%		1469-000005	TCZ-4R7	22R5V5	VCM-20-050J	CNO-547	MS-55
C39	56 5%		1469-000056	TCZ-56	22R5056	CM-19B-560J	CNO-456	MS-456
C40	10000 1400V		DAC-27	DDI6-103	HVE16S1	16DP-3-103	UAC-110	BL-S10
C41	.047 600V		P688N-047	DD-503	CUB4S47	6DP-3-473	GEM-6147	6TM-S47
C42	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C43	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA G. E. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K		ERC-374	ST-159 *			FB55T154	Loudness, Channel 2
	150K Tap							
B	500K			STR-159 *			RU55T154	Loudness, Channel 1
	150K Tap							
C	Shaft			Not Req.			CS3500	
R2A	500K		ERC-370	B-60	AD47-500K-Z		FA55A	Contour, Channel 2
B	500K			SR-60	Not Req.		RU55A	Contour, Channel 1
C	Shaft			Not Req.	KSS-3		CS3500	
R3A	500K		ERC-371	B-613			FA55R	Balance, Channel 2
B	500K			SR-60			RU55A	Balance, Channel 1
C	Shaft			Not Req.			CS3500	
R4A	1meg		ERC-372	F1-51				Bass, Channel 2
B	1meg			R2-51				Bass, Channel 1
C	Spring			AK-32				Friction Drive
R5A	500K		ERC-373	F1-40				Treble, Channel 2
B	500K			R2-40				Treble, Channel 1
C	Spring			AK-32				Friction Drive
R6A	500K		ERC-366	AB-60			FA55A	Tuner Level, Channel 2
B	500K			SR-60			RU55A	Tuner Level, Channel 1
C	Shaft			AK-1			CS3500	

* Do not use tap 1.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R7	62K			
R8	220K			
R9	56K			
R10	1800Ω			
R11	330K			
R12	1meg			
R13	1800Ω			
R14	43K			
R15	1.3meg			
R16	27K			
R17	16K			
R18	22K			
R19	820Ω			
R20	470K			
R21	120K			
R22	1800Ω			
R23	1meg			
R24	200K			
R25	1.8meg			
R26	750K			
R27	1200Ω			
R28	22K			
R29	470K			
R30	33K			
R31	1000Ω			
R32	33K			
R33	120K			
R34	120K			
R35	62K			
R36	220K			
R37	330K			
R38	1800Ω			

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R39	1meg			
R40	56K			
R41	1800Ω			
R42	43K			
R43	1.3meg			
R44	27K			
R45	16K			
R46	22K			
R47	820Ω			
R48	470K			
R49	120K			
R50	1800Ω			
R51	1meg			
R52	200K			
R53	1.8meg			
R54	750K			
R55	1200Ω			
R56	22K			
R57	470K			
R58	33K			
R59	1000Ω			
R60	33K			
R61	120K			
R62	120K			
R63	1000Ω 2W			
R64	15K			
R65	5600Ω 1W			
R66	5600Ω 2W			
R67	6.8Ω 2W			
R68	1000Ω 2W			
R69	4.7Ω 2W			

PARTS LIST AND DESCRIPTIONS (Continued)

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	G. E. PART No.	REPLACEMENT DATA
K1	Tone Comp.	100mmf, (2) 4700mmf, 1000Ω, (2) 100K, 470K	EEK-010	Aerovox PA-659 Centralab PC-190 Sprague TC-1
K2	Tone Comp.	100mmf, (2) 4700mmf, 1000Ω, (2) 100K, 470K	EEK-010	Aerovox PA-659 Centralab PC-190 Sprague TC-1

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	PRI.	SEC. 1	SEC. 2	G. E. PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.		
T1	117V @ 1A	600VCT @ .140A (No Signal)	52VCT @ .300A DC	ETP-336						
	SEC. 3	SEC. 4	SEC. 5							
	5V @ 1.9A	6.3VCT @ 3.2A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	G. E. PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	7600Ω CT	16Ω Tap @ 8Ω, 4Ω	ETO-187					
T3	7600Ω CT	16Ω Tap @ 8Ω, 4Ω	ETO-187					

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	G. E. PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.3A	EER-014				Dual, Common Cathode

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			G. E. PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG	2A 250V S/B		EJW-004	313002 (3AG 2A 250V) S/B	342001	MDX2	HKP

MISCELLANEOUS

ITEM No.	PART NAME	G. E. PART No.	NOTES
M3	Switch	ESW-116	Function Selector (Rotary Wafer Type)
M4	Switch	ESW-117	Mode (Rotary Wafer Type)
M5	Switch	ESW-118	Rumble Filter (DPDT Slide Type)
M6	Switch	ESW-120	Power Off-On (SPST Slide Type)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	EDK-626	Large, With Half Line
Knob	EDK-627	Large, With Full Line
Knob	EDK-628	Outer Shaft
Knob	EDK-629	Outer Shaft
Knob	EDK-630	Inner Shaft
Cabinet	EAV-1012	Brown
Cabinet	EAV-1013	White

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1785-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder

GONSET MODEL G-12 (3316) (3329)

GONSET MODEL
G-12 (3316) (3329)

MODEL G-12(3316)

NOTICE

ONLY THOSE PERSONS PROPERLY LICENSED BY FCC ARE PERMITTED TO MAKE CRYSTAL SUBSTITUTION OR EFFECT REPAIRS ON THE TRANSMITTER PORTION OF THIS UNIT.

GONSET MODEL
G-12 (3316) (3329)

TRADE NAME	Gonset Models G-12 (3316), G-12 (3329)
MANUFACTURER	Gonset Div., Young Spring & Wire Corp., 801 S. Main Street, Burbank, Calif.
TYPE SET	AC (or) Battery Operated Crystal Controlled 8 Tube Citizens Band Transmitter-Receiver
POWER SUPPLY	3316: 110-120 Volts AC, 60 Cycles (or) 12 Volt Storage Battery 3329: 110-120 Volts AC, 60 Cycles (or) 6 Volt Storage Battery
RATING	AC: 50 Watts, .5 Amp. @117 Volts AC 12VDC: 3.8 Amp. @12.6 Volts DC 6VDC: 7.6 Amp. @6.3 Volts DC
FREQUENCY RANGE	Any 4 of Citizens Band Channels 1 thru 22

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Suggested Alignment Tools:
A1 thru A7, A9 . . . GENERAL CEMENT #9296, 9297
WALSCO #2546, 2547
A8, A10 . . . . . GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528
All . . . . . GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538

RECEIVER ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .001mfd to pin 2 (grid) of Mixer. Low side to chassis.	1650KC		DC probe to point (A). Common to chassis.	A1, A2, A3, A4, A5, A6	Adjust for maximum deflection on first peak as slug enters coil. (Attenuate generator for -3V max.)
2.	Adjust A7 for maximum receiver background noise.					

TRANSMITTER ALIGNMENT

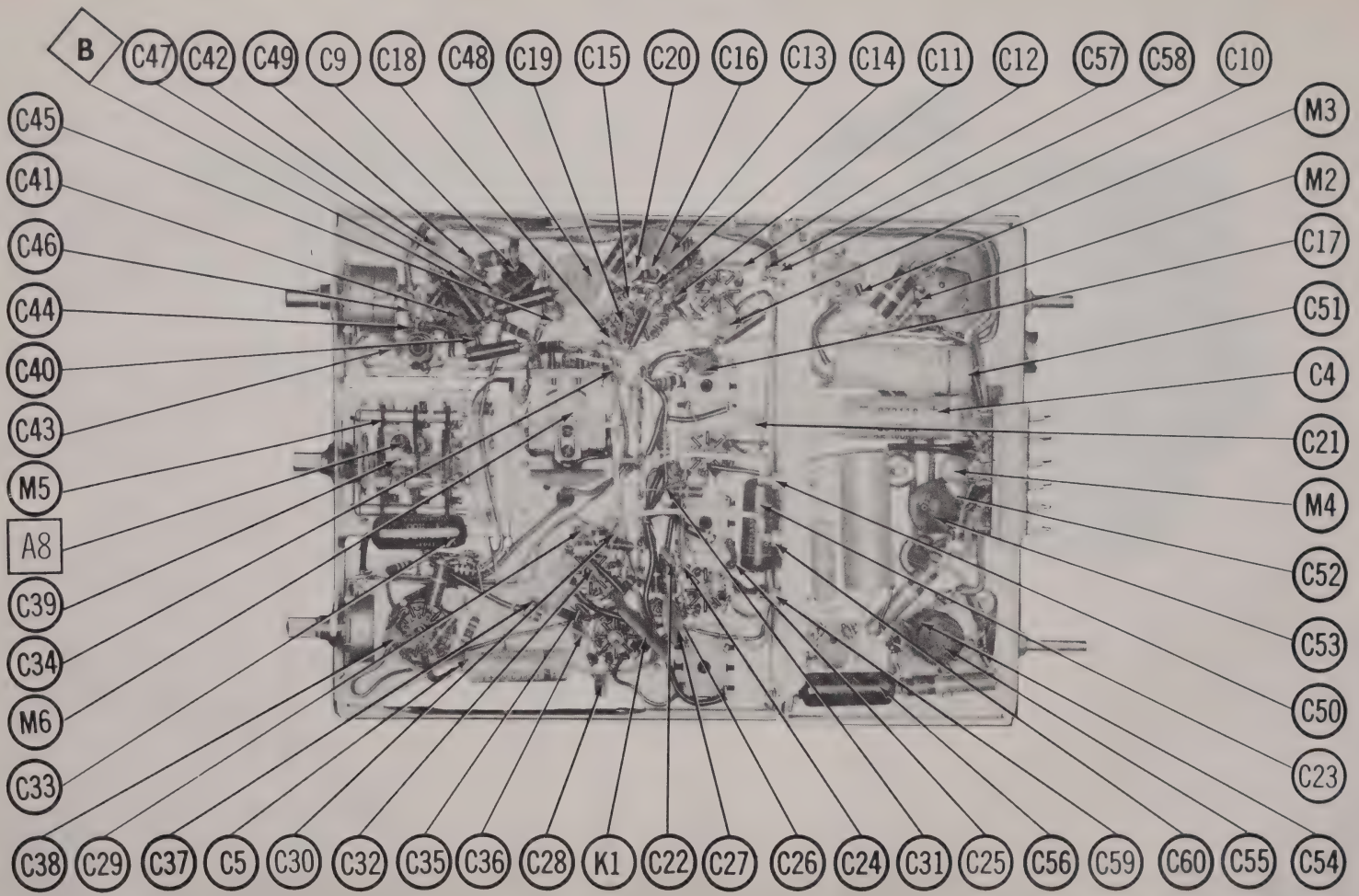
1.	Connect a 52Ω dummy load to the antenna jack.
2.	Using a frequency measuring instrument, adjust A8 to frequency indicated on crystal (within 100∿).
3.	Adjust A9 for maximum voltage at point (B) (pin 7 of V8).
4.	Adjust A10 and A11 for maximum indicator lamp brightness. Start with A10 at maximum capacity.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

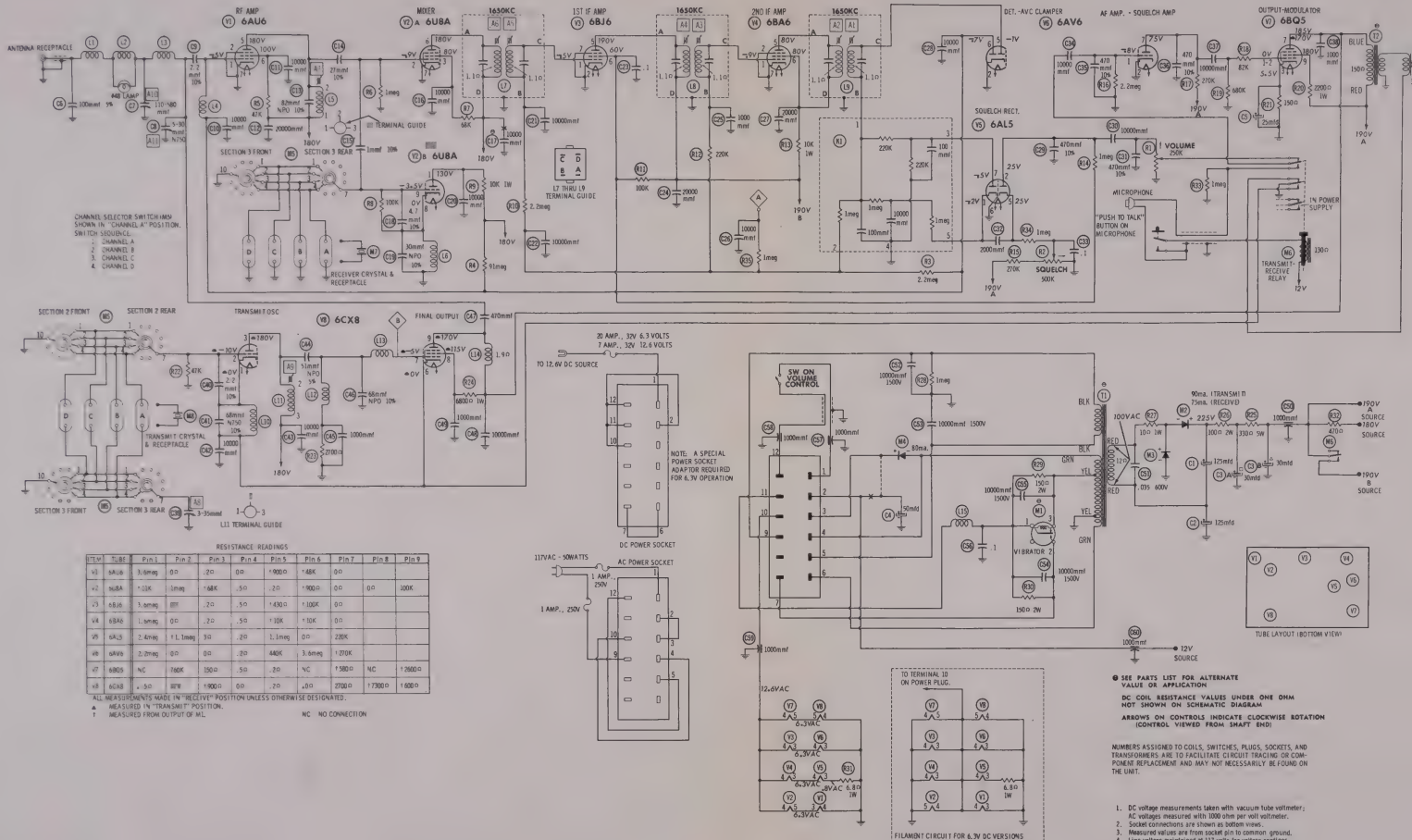
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KZ429 .

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

SET 528 FOLDER 7



CHASSIS BOTTOM VIEW - ALIGNMENT, CAPACITOR & MISC. IDENT.



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AU6	3.6meg	0Ω	.2Ω	0Ω	†900Ω	†48K	0Ω		
V2	6U8A	†10K	1meg	†68K	.5Ω	.2Ω	†900Ω	0Ω	0Ω	100K
V3	6BJ6	3.6meg	∞	.2Ω	.5Ω	†430Ω	†100K	0Ω		
V4	6BA6	1.6meg	0Ω	.2Ω	.5Ω	†10K	†10K	0Ω		
V5	6AL5	2.4meg	†1.1meg	3Ω	.2Ω	1.1meg	0Ω	220K		
V6	6AV6	2.2meg	0Ω	0Ω	.2Ω	440K	3.6meg	†270K		
V7	6BQ5	NC	760K	150Ω	.5Ω	.2Ω	NC	†580Ω	NC	†2600Ω
V8	6CX8	▲.5Ω	88Ω	†900Ω	0Ω	.2Ω	▲0Ω	2700Ω	†7300Ω	†600Ω

ALL MEASUREMENTS MADE IN "RECEIVE" POSITION UNLESS OTHERWISE DESIGNATED.
▲ MEASURED IN "TRANSMIT" POSITION.
† MEASURED FROM OUTPUT OF ML. NC NO CONNECTION

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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GONSET MODEL G-12 (3316) (3329)

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE
V1	RF Amplifier	6AU6
V2	Mixer-Osc.	6U8A
V3	1st IF Amplifier	6BJ6
V4	2nd IF Amplifier	6BA6
V5	Squelch Rectifier	6AL5
V6	Det. -AVC Clamper-AF Amp. -Speech Amp.	6AV6
V7	AF Output-Modulator	6BQ5
V8	Trans. Osc. -Final Amp.	6CX8

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT.	GONSET PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.		
C1	125	200	073-018	AFHS1-22		FP122	TMS-1250	TVLS-1470 *		
C2	125	200	073-019	AFHS1-22		FP122	TMS-1250	TVLS-1470 *		
C3A	■30	350	073-026	AFH2-39	B0310	FP227.3	TMD-2385	TVL-2628		
B	▲30	350								
C4	50	25	073-118	PRS1265	BBR50-25	TC29	TD-50-25	TVA-1206		
C5	25	25	073-002	PRS1260	BBR25-25	TC26	TD-25-25	TVA-1205		

* Not normally in distributor's stock. Available thru distributor on order to manufacturer

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	100 5%		1469-0001	TCZ-100	22R5T1	CM-19B-101J	MCE235	MS-31
C7	110-580	#089-024						
C8	5-30 N750	#089-033						
C9	2.2 10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C10	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C11	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C12	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C13	82 NPO 10%			DTZ-82	C10Q82C	CCTO-820	CNO-482	10TCC-Q82
C14	27 10%		DI-27	DD-270	L10Q27	CCD-270	GP427	10TS-Q27
C15	1 10%		NPO-SI 1.0	TCZ-1			CNO-510	10TCC-V10
C16	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C17	10000	Note 1	BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C18	4.7 10%		NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-4R7	10TCC-V47
C19	30 NPO 10%		NPO-DI 33	TCZ-30	C10Q3C	CCTO-300	CNO-433	10TCC-Q30
C20	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C21	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C22	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C23	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C24	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C25	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C26	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C27	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C28	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C29	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C30	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C31	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C32	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C33	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C34	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C35	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C36	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C37	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C38	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C39	3-35	#089-006				403		
C40	2.2 10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C41	68 N750 10%		N750-DI 68	TCN-68	C10Q68U	CCTN-680	CN7-468	10TCU-Q68
C42	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C43	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C44	51 NPO 5%			TCZ-51	C10Q51C	CM-19B-510J	CNO-450	10TCC-Q50
C45	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C46	68 NPO 10%		NPO-DI 68	DTZ-68	C10Q68C	CCTO-680	CNO-468	10TCC-Q68
C47	470		SI 470	D6-471	BYA10T47	CCD-471	B-347	10TS-T47
C48	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C49	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-102	5HK-D10
C50	1000		EF-001	MFT-1000		CCF-102	CT280A	
C51	.035 600V		P688N-033		CUB6S33	6DP-3-333	GEM-6133	6PS-S35
C52	10000 1500V		DAC-27	DD16-103	HVE16S1	16DP-3-103	UAC-110	BL-S10
C53	10000 1500V		DAC-27	DD16-103	HVE16S1	16DP-3-103	UAC-110	BL-S10
C54	10000 1500V		DAC-27	DD16-103	HVE16S1	16DP-3-103	UAC-110	BL-S10
C55	10000 1500V		DAC-27	DD16-103	HVE16S1	16DP-3-103	UAC-110	BL-S10
C56	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C57	1000		EF-001	MFT-1000		CCF-102	CT280A	
C58	1000		EF-001	MFT-1000		CCF-102	CT280A	
C59	1000		EF-001	MFT-1000		CCF-102	CT280A	
C60	1000		EF-001	MFT-1000		CCF-102	CT280A	

\# Gonset Part Number.
Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	GONSET PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	250K	½	052-081	B-51	A47-250K-Z	Q13-130	U44	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			KR-1	SWE-12	76-1	UB-26	Power Off-On
R2A	500K	½	052-082	B-59	A47-500K-S	Q11-133	U50	Squelch
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: WORKMAN TV PART No.	REPLACEMENT DATA: REMARKS
R3	2.2meg			
R4	91meg			
R5	47K			
R6	1meg			
R7	68K			
R8	100K			
R9	10K 1W			
R10	2.2meg			
R11	100K			
R12	220K			
R13	10K 1W			
R14	1meg			
R15	270K			
R16	2.2meg			
R17	270K			
R18	82K			
R19	680K			

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: WORKMAN TV PART No.	REPLACEMENT DATA: REMARKS
R20	2200Ω 1W			
R21	150Ω			
R22	47K			
R23	2700Ω			
R24	6800Ω 1W			
R25	330Ω 5W	PW5-330	5W-SQ-330	
R26	100Ω 2W			
R27	10Ω 1W			
R28	1meg			
R29	150Ω 2W			
R30	150Ω 2W			
R31	6.8Ω 1W			
R32	470Ω			
R33	1meg			
R34	1meg			
R35	1meg			

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	GONSET PART No.	REPLACEMENT DATA
K1	Noise Clipper Network	(2) 100mmf, 10000mmf, (2) 220K, (3) 1 meg	069-003	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: GONSET PART No.	REPLACEMENT DATA: Merit PART No.	REPLACEMENT DATA: Miller PART No.	REPLACEMENT DATA: Stancor PART No.	NOTES
L1	RF Choke(.56uh)	027-077	BC-560	4588	RTC-8513	
L2	Output Indicator	011-118				
L3	RF Choke	011-120				
L4	RF Choke(5.6uh)	027 028	BC-565	4609	RTC-8519	
L5	RF	012-414	TV-118	6171-A	RTC-8609	
L6	RF Choke(5.4uh)	027-004	SW-631	4609	RTC-8519	
L7	1st IF	014-030				
L8	2nd IF	014-030				
L9	3rd IF	014-030				
L10	RF Choke(5.6uh)	027-028	BC-565	4609	RTC-8519	
L11	Osc. Plate	012-415	TV-118	6171-A	RTC-8609	
L12	RF Choke(5.6uh)	027-028	BC-565	4609	RTC-8519	
L13	RF Choke (.47uh)	027-073		4588	RTC-8513	
L14	RF Choke(15uh)	027-032		4624	RTC-8524	
L15	Hash Choke(4uh)	027-010	BC-537	5219	RTC-9181	

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	REPLACEMENT DATA: GONSET PART No.	REPLACEMENT DATA: Merit PART No.	REPLACEMENT DATA: Stancor PART No.	REPLACEMENT DATA: Thordarson PART No.	REPLACEMENT DATA: Triad PART No.	NOTES
T1	117V Ⓐ .5A (AC Only)	100V Ⓐ .300A	12.6V Ⓐ 2A *	271-068①					① Part #271-071 used in 6-volt DC versions. * AC operation filament supply. Part of primary when used for DC operation.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: GONSET PART No.	REPLACEMENT DATA: Merit PART No.	REPLACEMENT DATA: Stancor PART No.	REPLACEMENT DATA: Thordarson PART No.	REPLACEMENT DATA: Triad PART No.	NOTES
T2	2700Ω	3-4Ω	272-004 ①					① Alternate Part #272-034.

SPEAKER

ITEM No.	TYPE: SIZE	TYPE: FIELD	TYPE: V. C. IMP.	REPLACEMENT DATA: GONSET PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1	3½"	PM	3-4Ω	152-016	3A070T	

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA: GONSET PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: RADIART PART No.	NOTES
M1	Interrupter	12V	115∿	117-003	6301	G1601	6301	12 Volt Versions
	Interrupter	6V	115∿	117-008	5301	1601	5301	6 Volt Versions

POWER RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: GONSET PART No.	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: SARKES TARZIAN PART No.	REPLACEMENT DATA: SYLVANIA PART No.	NOTES
M2	.090A	474-012	1N1763 *	40H *	SR500 *	* Silicon Type
M3	.090A	474-012	1N1763 *	40H *	SR500 *	
M4	.070A	474-004	1N1763 *	40H *	SR500 *	

MISCELLANEOUS

ITEM No.	PART NAME	GONSET PART No.	NOTES
M5	Switch	171-096	Channel Selector (Rotary Wafer Type)
M6	Relay	111-091	AC-12VDC Versions
	Relay	111-090	AC-6VDC Versions
	Microphone	113-015A	
M7	Crystal		Receive
M8	Crystal		Transmit

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: GONSET PART No. FUSE	REPLACEMENT DATA: GONSET PART No. HOLDER	REPLACEMENT DATA: LITTELFUSE PART No. FUSE	REPLACEMENT DATA: LITTELFUSE PART No. HOLDER	REPLACEMENT DATA: BUSS PART No. FUSE	REPLACEMENT DATA: BUSS PART No. HOLDER
	3AG	1A ① 250V			312001 (1A 250V)		AGC 1	
	3AG	1A ① 250V			312001 (1A 250V)		AGC 1	
		7A 32V ②			307007 (7A 32V)		SFE 7	
		20A 32V ③			3110202 (30A 32V)		SFE 20	

① 117 VAC Operation. ② 12VDC Operation. ③ 6VDC Operation.

CABINETS & CABINET PARTS

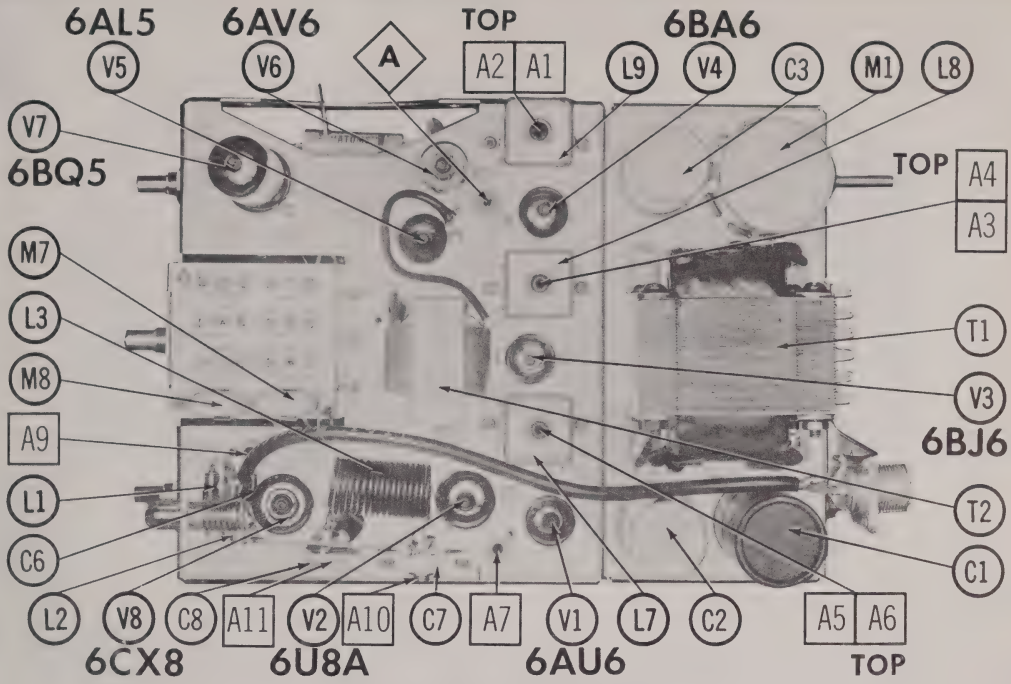
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	211-017	Channel Selector
Knob	211-016	Volume, Squelch
Cabinet	465-066	

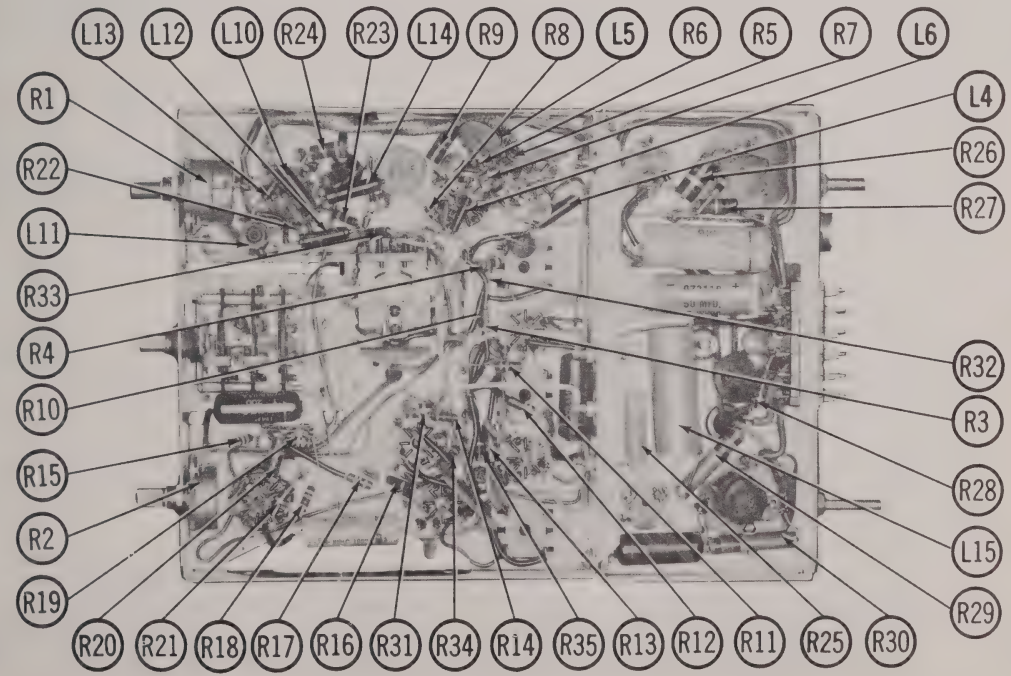
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)



CHASSIS - TOP VIEW



CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.

PHOTOFACT® Folder with CIRCUITRACE®

**MOTOROLA MODELS
C12B, P, W (CH. HS-815)**

MOTOROLA MODELS
C12B, P, W (CH. HS-815)

MODEL C12B

TRADE NAME	Motorola Models C12B, C12P, C12W (Ch. HS-815)
MANUFACTURER	Motorola, Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	AC Operated 6 Tube AM Receiver With Electric Clock
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles RATING 31 Watts, .34 Amp. @117 Volts AC (Less Clock)
TUNING RANGE—BROADCAST	535 – 1620KC

ALIGNMENT INSTRUCTIONS

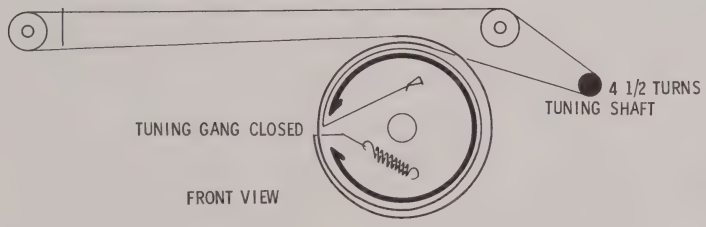
ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1 Thru A4...GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5.....GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of Converter. Low side to chassis.	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	"	1620KC	"	"	A5	"

DIAL CORD STRINGING



MOTOROLA MODELS
C12B, P, W (CH. HS-815)

SET 528 FOLDER 8

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KG433

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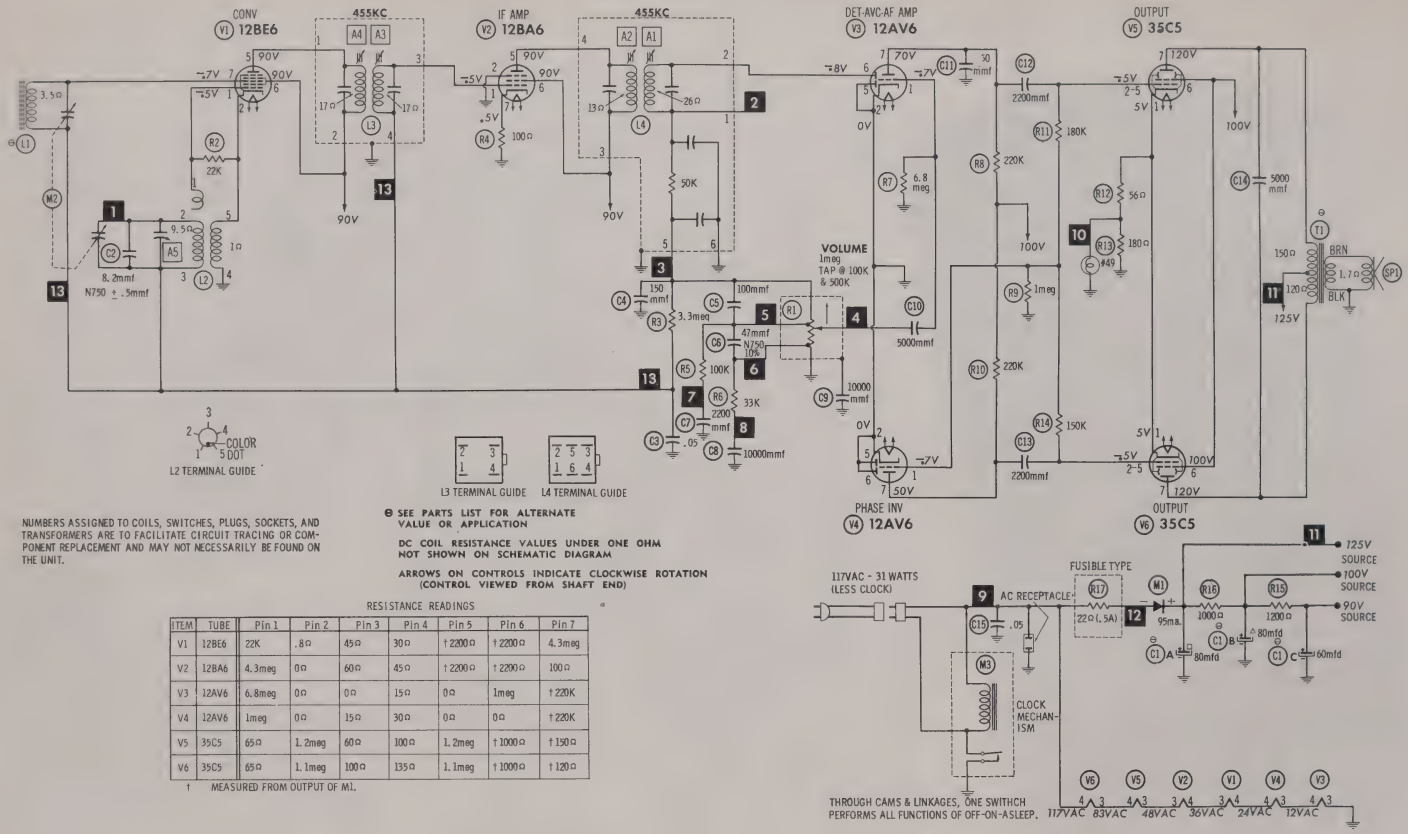

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.8Ω	45Ω	30Ω	†2200Ω	†2200Ω	4.3meg
V2	12BA6	4.3meg	0Ω	60Ω	45Ω	†2200Ω	†2200Ω	100Ω
V3	12AV6	6.8meg	0Ω	0Ω	15Ω	0Ω	1meg	†220K
V4	12AV6	1meg	0Ω	15Ω	30Ω	0Ω	0Ω	†220K
V5	35C5	65Ω	1.2meg	60Ω	100Ω	1.2meg	†1000Ω	†150Ω
V6	35C5	65Ω	1.1meg	100Ω	135Ω	1.1meg	†1000Ω	†120Ω

† MEASURED FROM OUTPUT OF M1.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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MOTOROLA MODELS C12B, P, W (CH. HS-815)

PARTS LIST AND DESCRIPTIONS

TUBES

◆ GENERAL ELECTRIC ◆		RAYTHEON ◆	SYLVANIA ◆
ITEM No.	USE	TYPE	
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det.-AVC-AF Amp.	12AV6	
V4	Phase Inverter		12AV6
V5	Output		35C5
V6	Output		35C5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■80	150	23B60423A010					PCLS-3445.5*	Note 1
B	▲80	150							
C	60	150							

Note 1. Some versions may use 40-40-30mfd in this application (Part #23B639496).
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	8.2 N750 ± .5mmf	#21K129671						
C3	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C4	150		DI-150	DD-151	L10T15	CCD-151	B-315	10TS-T15
C5	100		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C6	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C7	2200		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C8	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C9	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C10	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C11	150		DI-150	DD-151	L10T15	CCD-151	B-315	10TS-T15
C12	2200		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C13	2200		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C14	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C15	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50

Motorola Part Number.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	1meg Taps @ 100K & 500K	½	18B60177A01					Volume

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

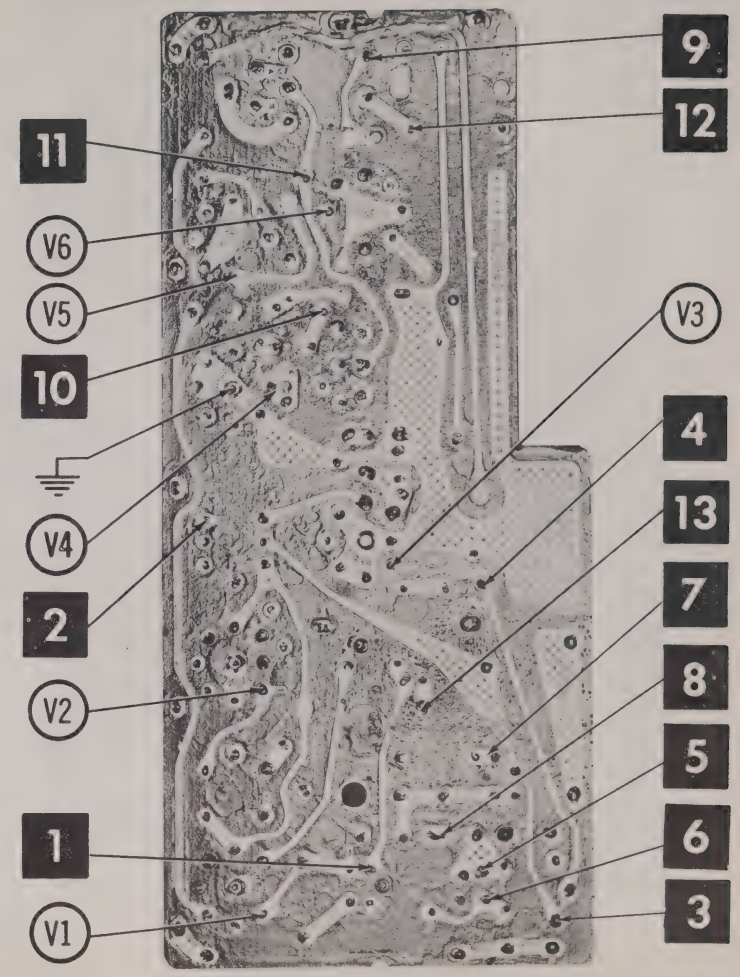
ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	22K			
R3	3.3meg			
R4	100Ω			
R5	100K			
R6	33K			
R7	6.8meg			
R8	220K			
R9	1meg			
R10	220K			
R11	180K			
R12	56Ω			
R13	180Ω			
R14	150K			
R15	1200Ω			
R16	1000Ω			
R17	22Ω (.5A)		F22	# 65K647003

Motorola Part Number.

PRINTED BOARD

A Howard W. Sams CIRCUITRACE® Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		MOTOROLA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1 L2 L3 L4	Loop Ant. Osc. Input IF Output IF	24D60287A03 ① 24K646052 24K641313 24K641314	BC-356	13-PC1	RTC-8641	① Model C12B,Part #24D60287A01 used in Model C12P. Part #24D60287A02 used in Model C12W.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	5200Ω CT	6-8Ω	25B60169A01-B ①					① Alternate Part # 25B60169A01

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	5"	PM	6-8Ω	50C60151A01	5A15Z8	

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	MOTOROLA PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.095A	48K646954 *	1N1763 ♦	150 *	SR200 ♦	* Selenium ♦ Silicon

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M2	Tuning Cap.	19C60186A01	2 Gang
M3	Clock Assembly	1V60030A36	Less Hands
	Printed Board	84C60215A01	Less All Components(When ordering specify part number and letter following the "BM" marking on bottom of printed board)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

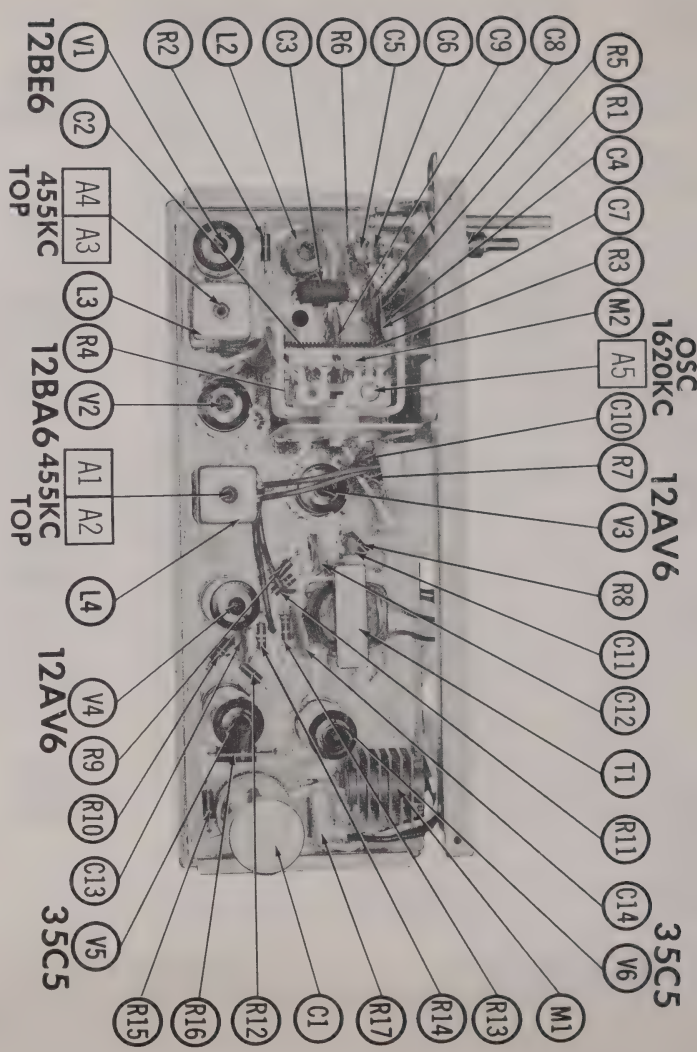
NAME	PART NO.	DESCRIPTION
Dial Pointer	52B60163A01	
Dial Scale	34D60137A01	
Crystal	61C60136A01	Clock
Knob	36K646959	Tuning, Volume; Model C12B
Knob	36K646958	Tuning, Volume; Model C12P
Knob	36B646805	Tuning, Volume; Model C12W
Pushbutton	38B60188A01	Four Used
Cabinet	1V60030A39	Model C12B
Cabinet	1V60030A37	Model C12P
Cabinet	1V60030A38	Model C12W

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874

CHASSIS—TOP VIEW



PHOTOFACT® Folder

NORELCO MODEL
Stereo Continental 400

NORELCO MODEL
Stereo Continental 400

NORELCO MODEL
Stereo Continental 400

GENERAL INFORMATION

The Norelco Stereo Continental "400" is a four-track stereo tape recorder. The unit will record and play back four-track stereo tapes. Two-track monophonic tape may be played back on the unit.

Recordings may be made from a microphone, radio, or phonograph.

This model has three tape speeds, 7 1/2, 3 3/4, and 1 7/8 ips. Using a four-track tape, recording times are as follows:

Length	7 1/2 ips	3 3/4 ips	1 7/8 ips
1200 ft.	1 hour	2 hours	4 hours
1800 ft.	1 1/2 hours	3 hours	6 hours
2400 ft.	2 hours	4 hours	8 hours

This recorder is designed to operate on 110 volts AC, 60 cycles.

Supplied By:

North American Philips Company, Inc.
High Fidelity Products Division
230 Duffy Avenue
Hicksville, L. I., New York

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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CQ448

SET 528 FOLDER 9

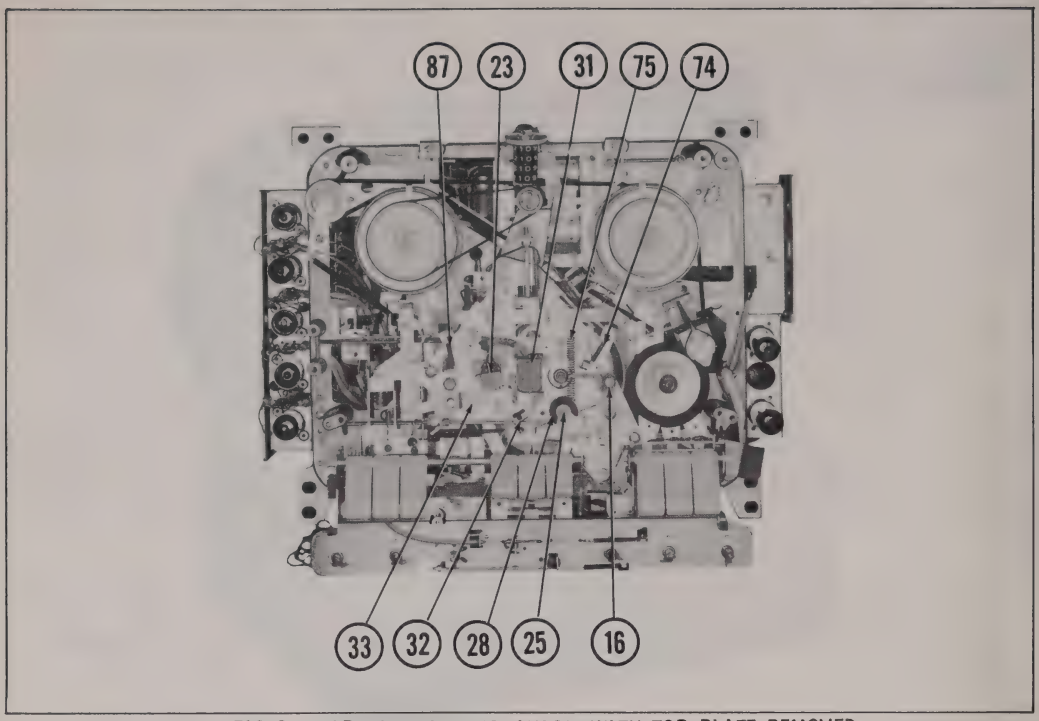


FIG.1 TOP VIEW OF MECHANISM WITH TOP PLATE REMOVED

PREPARING FOR OPERATION

1. Remove the lid from the carrying case. (The lid contains the speaker which connects to the "Speaker Right" jack to complete the right stereo channel).
2. Place the recorder at a convenient height where the controls are accessible.
3. Remove the AC cord from compartment in the bottom of the recorder. Plug the cord into a convenient AC outlet of proper rating.
4. The recorder is now ready for use. Before operating, the operator should familiarize himself with the controls.

FUNCTION OF CONTROLS

Rewind

Depressing this key rewinds the tape at a high speed.

Stop

Depressing this key stops the tape transport.

Fast Forward

When this key is depressed, the tape winds onto the take-up reel at a high rate of speed.

Speed Keys

Depressing any one of the three keys, turns the recorder on. Tape speed will be set for 1 7/8, 3 3/4, or 7 1/2 ips, depending on the key depressed.

Off Button

Depressing this button turns the recorder off.

Play

Sets the recorder for playback of a recording when depressed with one of the speed keys.

Record Lock

This button holds the Record key down for recording.

Record

Depressing this key at the same time as the Record Lock button places the recorder in the record mode.

Pause

The Pause key temporarily stops the tape motion.

Pause Release

Depressing this button releases the Pause key allowing the recorder to continue operation.

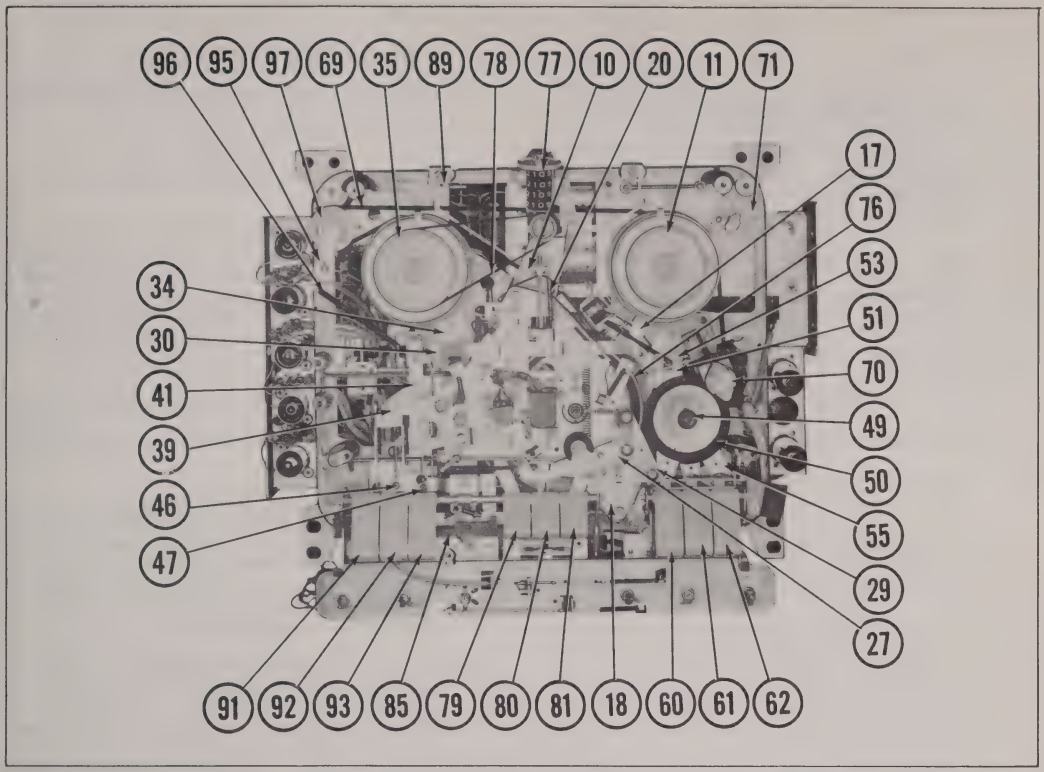


FIG.2 TOP VIEW OF MECHANISM WITH TOP PLATE REMOVED

Microphone

Controls the gain during microphone recording. Turning this control clockwise increases the gain.

Radio Phono

Controls the gain when recording with a radio or phonograph. To increase the gain, turn the control clockwise.

Selector

This control selects the modes of operation for PA, Stereo, Mono 1-4, and Mono 2-3.

Dubbing

This switch permits recording sound on sound when moved to the "In" position.

Monaural

Moving this control in the direction of the arrow sets the recorder for monaural recording or playback.

Volume

Controls the volume level during playback. To increase the volume, turn the control clockwise.

Balance

This control compensates for unbalance between channels. To balance the channels, adjust the control until both channels are operating at the same volume level.

Tone

The twin Tone controls adjust the tone during playback of a recording. The upper knob controls the right channel and the lower knob controls the left channel. The controls are rotated clockwise for treble and counterclockwise for bass.

Automatic Stop

The recorder will be automatically stopped when the metallic control foils on the ends of the recording tape pass through the tape stop. The foil actuates a relay circuit which in turn stops the unit. This feature will work only on tapes provided with control foils.

Index Counter

When starting a new recording, set the index counter to zero. Logging the tape at different points makes it easy to locate any given part of a recording.

Threading Tape

1. Place a reel of tape on the left-hand turntable and an empty reel on the right-hand turntable.
2. Unwind about 12" of tape from the supply reel and hold a section of it taut. Insert this section into the tape slot, making certain the dull-coated side faces the rear of the recorder.
3. Insert the free end of the tape into one of the radial slots in the hub of the take-up reel. Turn the reel several turns to secure the tape to the reel and take up all slack between reels.

To Record from Microphone (Stereo)

1. Thread the tape.
2. Set the index counter to zero.
3. Depress correct speed key. (This also turns on the recorder.)
4. Move the Selector to the Stereo position.
5. Plug the microphone into the Microphone-Stereo jack.
6. Depress the Stop key.
7. Depress the Pause key.
8. Depress the Record key and the Record Lock button.
9. Adjust the recording level.

NOTE:: During stereo recording, both of the luminous bands of the recording level indicator will be operative.

10. Press the Pause Release button to start the recording.
11. The recording may be interrupted by depressing the Pause key. Recording may be resumed by pressing the Pause Release button.
12. The recording may be monitored by plugging a pair of 1000-ohm stereo headphones into the Headphone-Stereo jack.
13. To stop the recording, depress the Stop key. Turn the recorder off by pressing the Off button.

To Record from Microphone (Monaural)

1. Thread the tape.
2. Set counter to zero.
3. Depress desired speed key.
4. Place Selector at Mono 1-4 position.
5. Move Monaural switch to R+L position.
6. Plug in the microphone and place it with the left channel facing the sound source.
7. Depress the Stop and Pause keys.
8. Depress the Record key and Record Lock button.
9. Adjust the recording level.
10. Press the Pause Release button to start the recording.
11. When track 1 is recorded, turn the full reel over and place it on the left spindle. This places track 4 in position for recording. After track 4 is recorded, turn the full reel over and place it on the left spindle. Place the Selector in the Mono 2-3 position and repeat the previous procedure.

To Record from a Radio or Television Receiver

Recordings may be made by one of the following methods:

1. Microphone Pickup from Radio Speaker — Place the microphone about 6 to 12 inches in front of the speaker. Turn the radio volume control to a normal level. Turn the radio tone control to treble or high. Set the recording level of the recorder and proceed as described under "To Record from Microphone".
2. Across Volume Control of Radio — Prepare a shielded cable with alligator clips on one end and phono plug on the other end. Connect the clips across the radio volume control, and the phono plug to the Radio/ Phono input on the recorder. Set the recording level with the Radio/ Phono knob and proceed as described under "To Record from Microphone".
3. Direct Connection to Radio Loudspeaker — Make a shielded cable with two alligator clips on one end and a phono plug on the other. Connect the alligator clips to the speaker terminals and insert the phono plug into the Radio/ Phono input on the recorder. Set the recording level with the Radio/ Phono knob and proceed as described under "To Record from Microphone".

To Record from a Record Player

Connect the record player to the Radio/ Phono input of the recorder. Set the recording level with the Radio/ Phono knob and record as described under "To Record from Microphone".

To Play a Recording (Stereo)

1. Thread the tape.
2. Set the counter to zero.
3. Depress desired speed key.
4. Set volume control fully counterclockwise.
5. Set both tone controls to the flat position.
6. Press Play key.
7. Adjust volume, tone, and balance controls to desired listening levels.

8. To stop playback, depress Stop key. Turn unit off by depressing Off button.

To Play a Recording (Monaural)

1. Thread the tape.
2. Set counter to zero.
3. Press desired speed key.
4. Set Selector to Mono 1-4.
5. Set Monaural switch to R+L position.
6. Press Play key.
7. Adjust volume and left channel tone control for desired listening level.
8. After tracks 1 and 4 have been played, move the Selector to the Mono 2-3 position and repeat playback procedure.

Public Address

To use the unit for public address set the Selector to the PA position and depress one of the speed keys. When using the microphone input, the Microphone knob controls the volume output. When using the Radio/ Phono input the Radio/ Phono knob controls the volume output.

Erase

Previous recordings are automatically erased when a new recording is made. If a tape is to be erased without putting a new recording on the tape, proceed as with a regular recording except leave the microphone disconnected and the volume control at its extreme counterclockwise position.

DISASSEMBLY

To Remove Recorder from Case

1. Remove six push-on knobs.
2. Remove five screws from ornamental front cover and remove cover.
3. Remove knobs from Dubbing and Monaural switches.
4. Remove four screws from steel top plate and remove plate.
5. Remove eight bolts holding the tape transport to the case.
6. Pull the tape transport out of the case far enough to disconnect the speaker wires and to remove the line cord from the bottom compartment.
7. To reassemble reverse the above procedure.

ADJUSTMENTS

Record - Playback Head

1. Tighten head mounting screws until head lines up with tape guides at left and right.
2. Insert a new tape (erased) in the recorder.
3. Place recorder in stereo mode and record a 1000 cps (100% modulated) signal.
4. Invert the tape and play it back in the stereo position. The 1000 cycle signal should not be audible.
5. If the signal is audible the head must be raised.
6. If the signal is only audible on one channel and also in the Mono 2-3 position, the head must be lowered.

Erase Head

Erase head should be adjusted so that the upper edge of the black core is just visible over the top of the tape. Record a 1000 cps modulated signal again in stereo. Connect a voltmeter to the output of each channel. Play back the recorder signal with volume maximum in the stereo playback mode and note the output reading of each channel. Invert the tape and pass the recorded portion through the recorder in the stereo record mode. Make sure the input is disconnected and the volume is at a minimum. Again invert the tape and with the volume at maximum, replay the tape. Check the output on the meters. Attenuation of either signal must not be greater than 1.5 db. If both channels are attenuated the head must be raised. If the right channel is attenuated, the head must be lowered. Repeat this test to determine the proper adjustment.

Tape Pressure Pad

This pad should press the tape firmly against the gap of the record-playback head.

1. Thread the tape through the record-playback head but not past the pressure roller.
2. Press Play key.
3. Place a knob in the end of the tape and pull the tape to the right past the head. The tape tension as it moves through the head should be between 0.525 and 0.875 ozs.
4. Bend spring holding pressure pad assembly as necessary.

Tape Guide

The pointed end of the tape guide should be directed toward the center of the flywheel spindle.

Bearing Support with Pulley (70)

1. Remove drive belt (69).
2. Hold motor fan and give pulley (70) a few turns so that coupling spring is turned away from pulley.
3. Remove screws holding bearing support in place and remove bearing support.
4. Insert new bearing support, keeping motor plate in place, and turn pulley (70) so that coupling spring goes back in place.
5. Remove flexible cable from arm of line switch.
6. Close switch by pushing up on lever. Do not depress speed selector keys.
7. Connect recorder to 45 volt AC source.
8. Adjust bearing support so that pulley (70) just starts turning and runs at full speed for a few seconds.
9. Be sure that none of the speed selector wheels contact the pulley (70).
10. Tighten bearing support screws.
11. Check to see if motor still runs on 45 volt AC. If it does, reconnect flexible cable.

Speed Selector Wheel (50)

1. Remove grease cap (49) and "C" washer from top of wheel.
2. Loosen right-hand screw of speed selector assembly.
3. Pull push-button assembly toward front of recorder far enough to remove speed selector wheel.
4. To reassemble, reverse the foregoing procedure.

Speed Selector Wheel (52)

1. Remove speed selector wheel (50) as outlined previously.
2. Loosen two set screws of speed selector assembly and pull assembly towards front of recorder.
3. Lift speed selector arm (51) out.
4. Remove speed selector wheel (52).
5. Be certain that wire spring of bracket holder is pushed between middle and lower speed selector wheels.

Speed Selector Wheel (54)

1. Loosen speed selector assembly.
2. Swing line frame assembly with bracket and speed selector wheels outward.
3. Remove speed selector wheel (54).
4. When reassembling, be sure wire spring is between lower and middle speed selector arms.
5. To reassemble, reverse the foregoing procedure.

Flywheel (76)

1. Remove counter drive belt (78) and drive belt (69).
2. Remove spring (20) and rod (21).
3. Remove turntables (11) and (35), clutch discs (12) and (36), drive wheels (14) and (38), take-up arm (17) and supply arm (34).
4. Unsolder leads from heads (23) and (31) and switch.
5. Remove three screws holding upper plate (18) and remove plate.
6. Remove flywheel (76).
7. Make sure new flywheel is properly centered and does not bind at any point.
8. To reassemble, reverse the foregoing procedure.

CLEANING

The tape guides, flywheel spindle, and pressure pad should be cleaned with a soft brush to remove tape residue.

Clean the erase and record-playback heads with a soft, lint-free, cloth saturated with any good commercial head cleaner.

TROUBLE CHART

Symptom	Cause	Remedy
Tape rewinds too slowly.	1. Drive belt (69) greasy or stretched.	1. Clean or replace drive belt.
Tape loops.	1. Spring (20) improperly adjusted.	1. Adjust spring.
Reels wobble.	1. Spindle (13) or (37) bent. 2. Unused speed selector wheels touching pulley (70).	1. Straighten or replace spindle. 2. Check guiding bracket.
Tape bounces at start of playback or record.	1. Flywheel (76) greasy. 2. Clutch disc (12) or (36) sags.	1. Clean flywheel. 2. Replace disc.
Tape speed too slow.	1. Dry flywheel bearing.	1. Lubricate flywheel bearing.
Idler wheel (97) squeals.	1. Idler wheel bearing dirty.	1. Clean and lubricate idler wheel bearing.
Automatic stop does not function.	1. End of tape switch misadjusted. 2. Relay open or shorted.	1. Readjust end of tape switch. 2. Replace relay.
Playback output too low or crosstalk between channels.	1. Record-playback head (23) misadjusted.	1. Adjust record-playback head.
Counter does not function.	1. Drive belt (78) off or broken.	1. Replace drive belt.
Recorder speed slow.	1. Speed selector wheels (50), (52) or (54) dirty or worn. 2. Oil or dirt on driving surface of pulley (70).	1. Clean or replace appropriate wheel. 2. Clean pulley with alcohol or equivalent cleaner.
Recorder does not operate with speed key depressed.	1. Defective line switch. 2. Broken line cord. 3. Blown fuse. 4. Defective motor. 5. Defective power transformer.	1. Replace line switch. 2. Replace line cord. 3. Replace fuse. 4. Replace motor. 5. Replace power transformer.

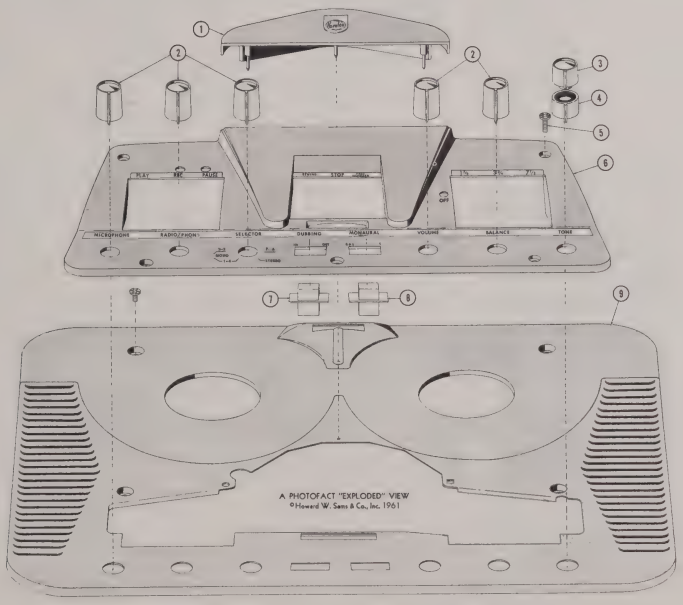


FIG. 3A EXPLODED VIEW OF PARTS ABOVE TOP PLATE

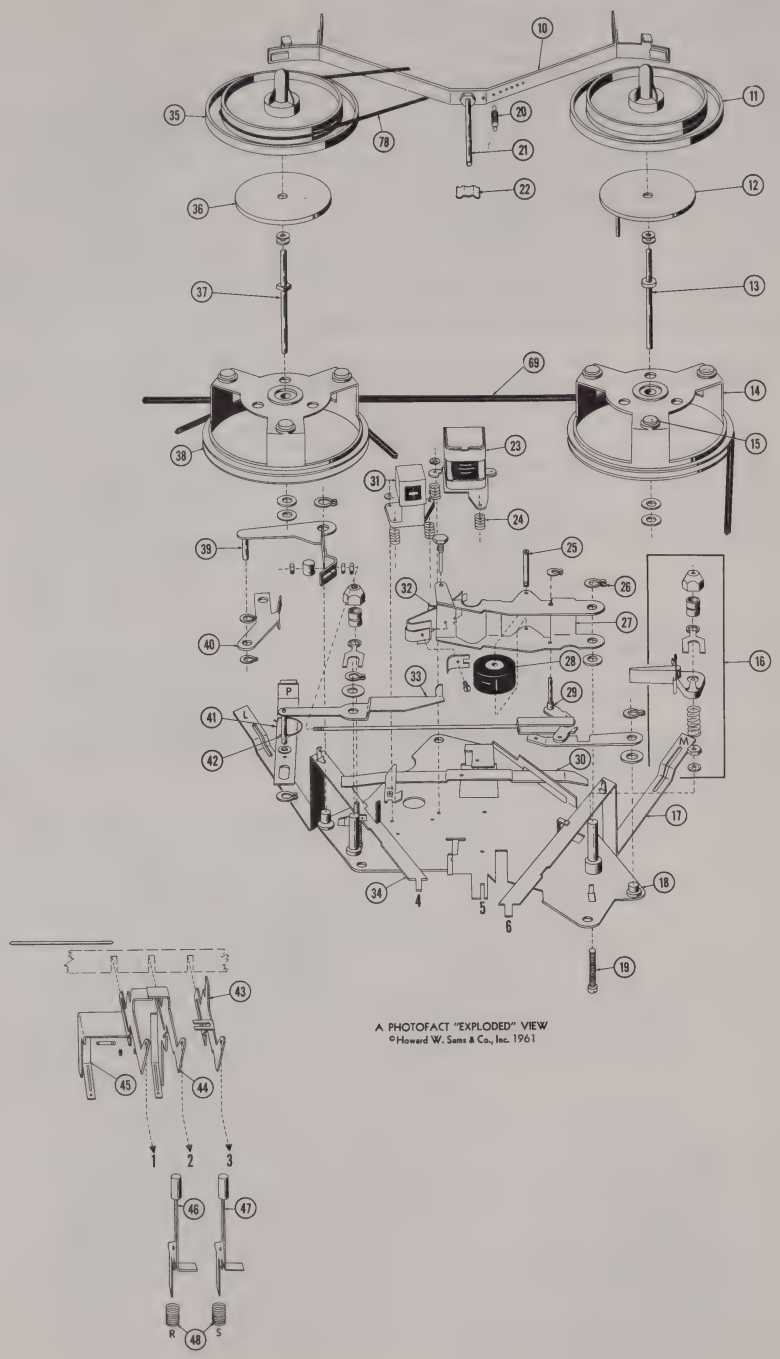


FIG.3B EXPLODED VIEW OF PARTS ABOVE UPPER PLATE

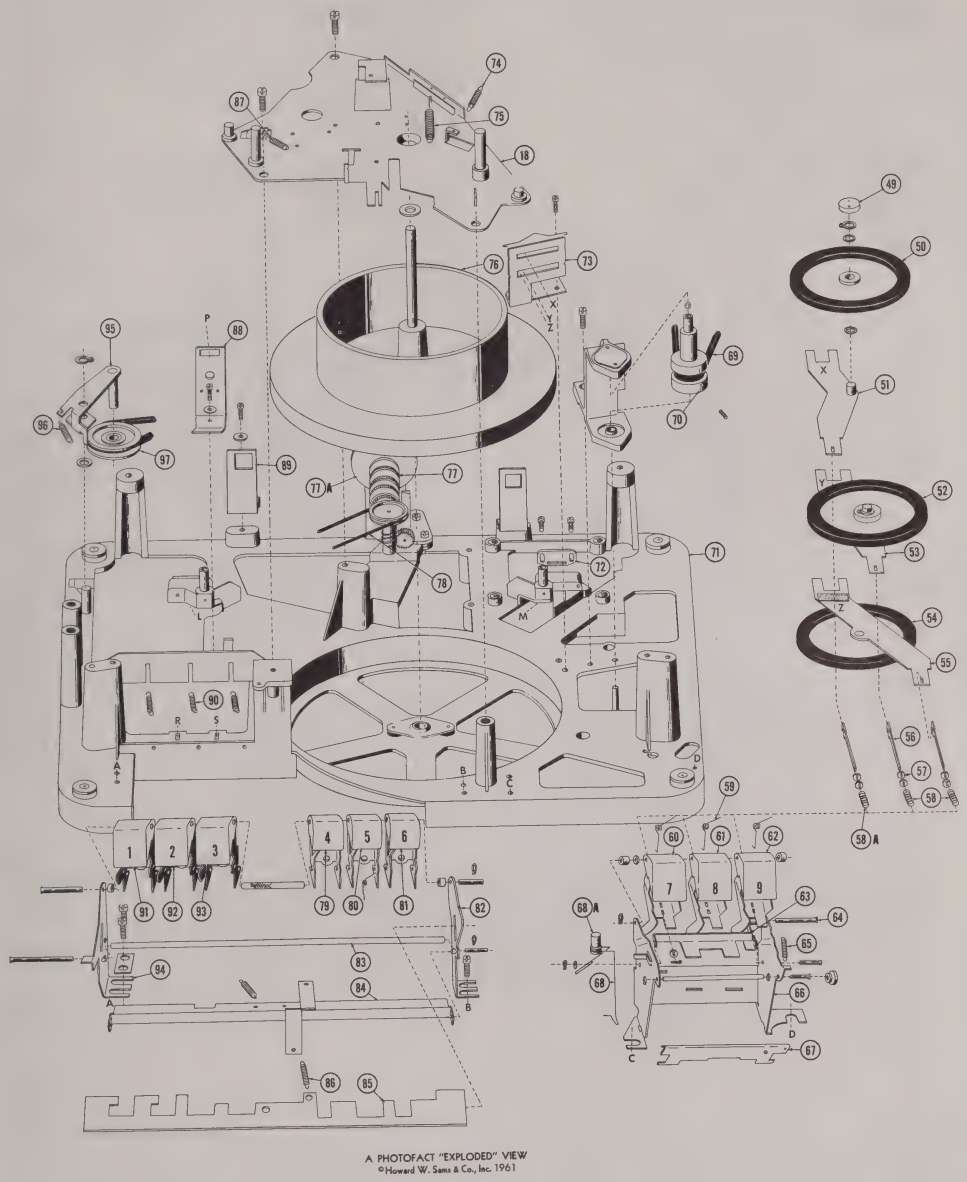
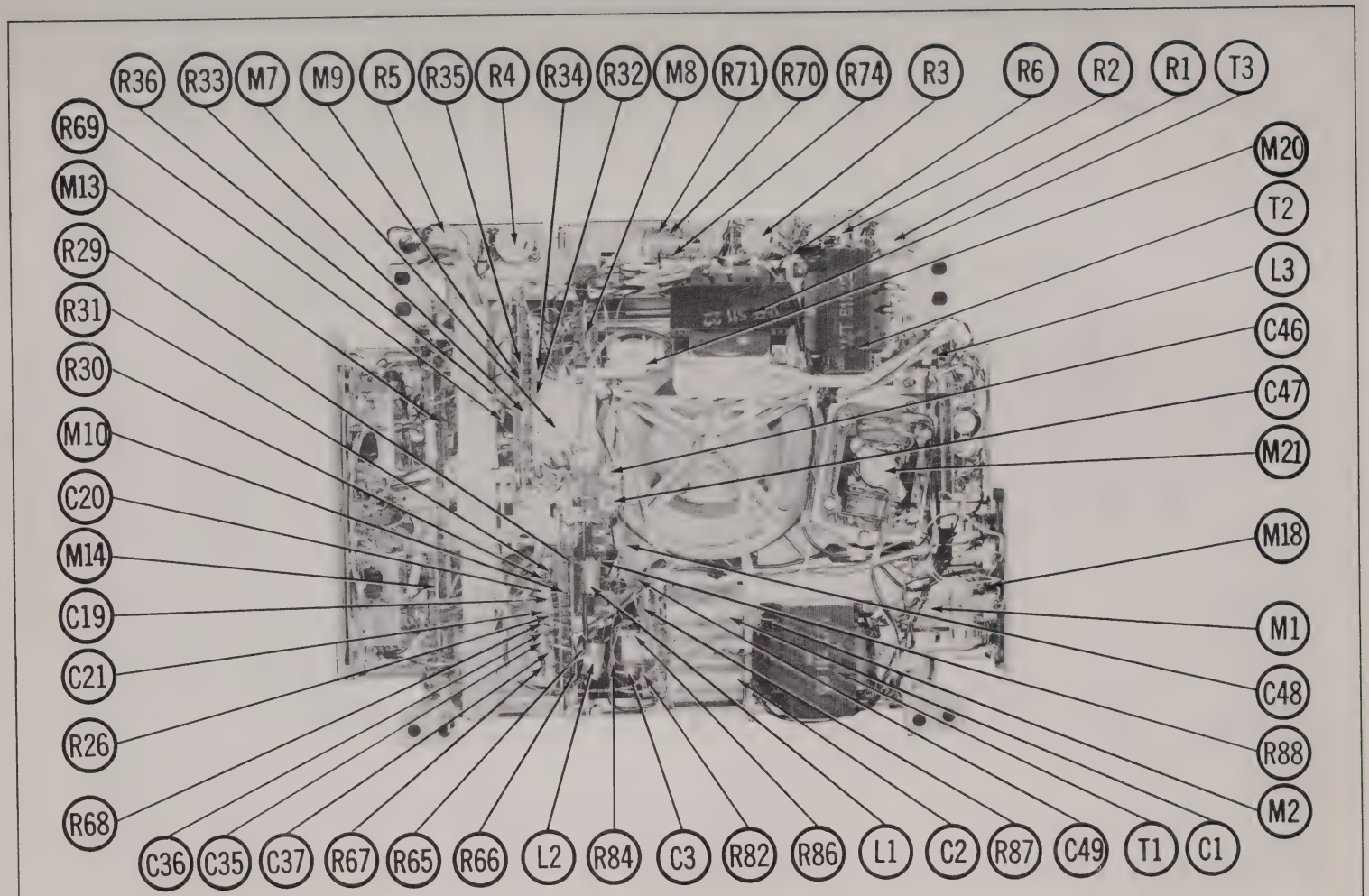


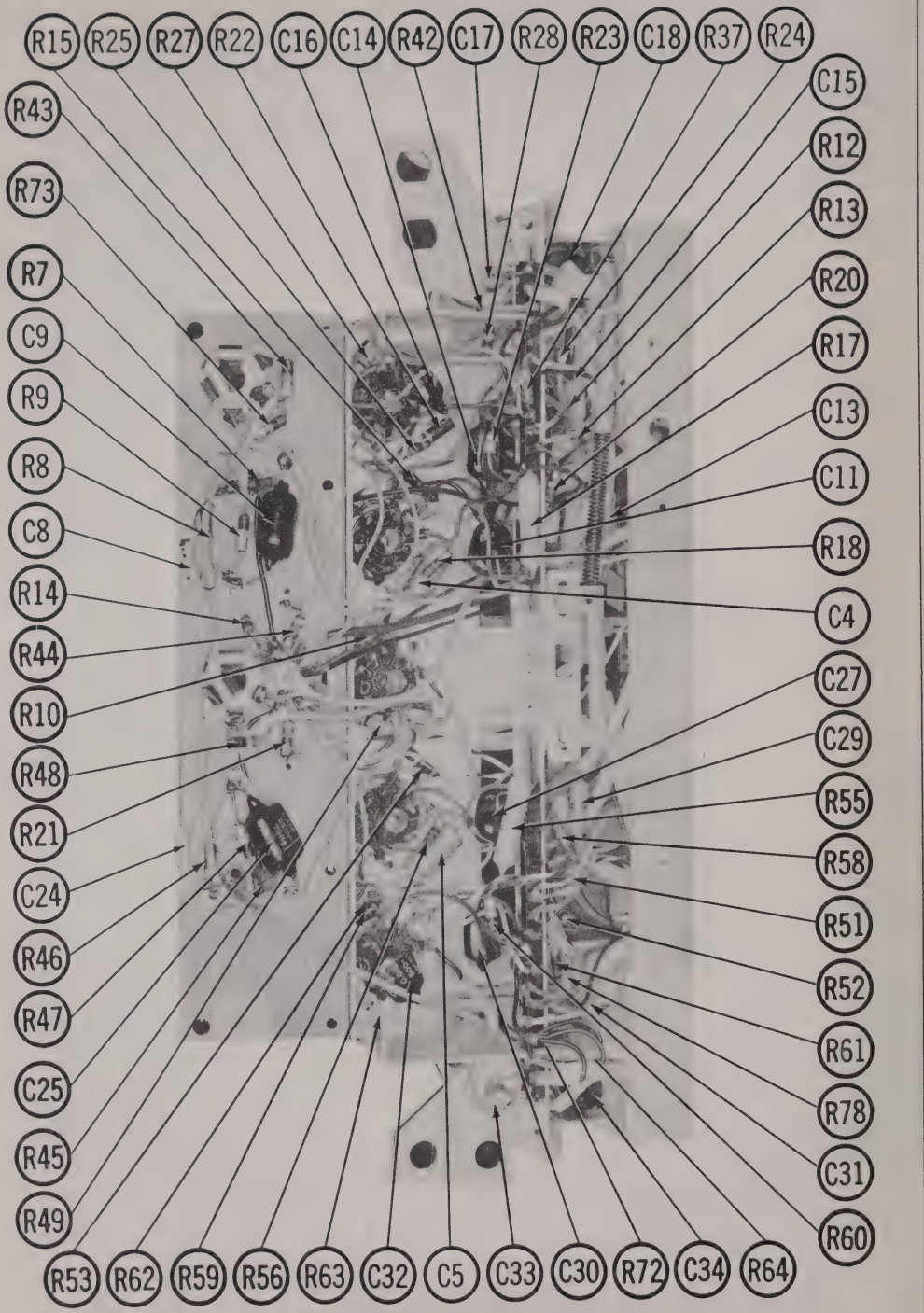
FIG.3C EXPLODED VIEW OF PARTS ABOVE MAIN CHASSIS

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description
1		Ornamental Cover-Rear
2	WT26191	Knob
3	WT26190	Concentric Knob-Upper Half
4		Concentric Knob-Lower Half
5		Ornamental Screw
6		Ornamental Cover Front
7		Sliding Knob
8		Sliding Knob
9		Steel Top Plate
10	WT92293	Stop Bracket
11	WT82193	Right Turntable
12	WT88655	Clutch Disc Right
13	WT88699	Right Spindle
14	WT88234	Right Drive Wheel
15		Rubber Pad
16		Tape Guide
17		Takeup Arm
18		Upper Plate
19		Stud
20	WT74094	Spring
21		Rod
22		Spacer Spring
23	A387024	Record-Playback Head
24		Spring
25	WT64612	Spindle
26		Lock Washer
27		Pressure Roller Lever
28	WT88166	Pressure Roller
29		Pressure Roller Actuator Assy.
30		Stop Bracket Arm
31	WT85549	Erase Head
32		Pressure Pad Holder
33		Pressure Release Arm
34		Supply Arm
35	WT82194	Left Turntable
36	WT47797	Clutch Disc Left
37	WT88700	Left Spindle
38	WT88234	Left Drive Wheel
39		Record-Playback Arm
40		Brake Release Arm
41		Turntable Pause Lever
42		Spring
43		Pause
44		Record Arm
45		Playback Arm
46	WT26186	Record Lock Button
47	WT26186	Pause Lock Button
48	WT73046	Spring
49		Grease Cap
50	WT88186	Speed Selector Wheel
51		1 7/8 Speed Selector Arm
52	WT88186	Speed Selector Wheel
53		3 3/4 Speed Selector Arm
54	WT88186	Speed Selector Wheel
55		7 1/2 Speed Selector Arm
56		Push Rod
57		Metal Ring
58	WT73043	Spring
58A	WT73050	Spring
59		Spring
60	WT26175	1 7/8 Speed Key
61	WT26175	3 3/4 Speed Key
62	WT26175	7 1/2 Speed Key
63		Arm
64		Spacer
65		Spring
66		Side Plate
67		Locking Bar
68		Retaining Spring
68A	WT26185	Off Button
69	WT49609	Drive Belt
70	WT86083	Motor Pulley - 60 Cycle
	WT86082	Motor Pulley - 50 Cycle
71		Main Chassis
72		Guide
73		Speed Selector Arm Guide
74	WT74067	Spring
75	WT74081	Spring
76	WT88603	Flywheel
77	WT89821	Counter Mechanism
77A	A9024.9	Counter Reset Knob
78	WT49608	Counter Belt
79		Rewind Key
80		Stop Key
81		Fast Forward Key
82		Side Plate - Right
83		Stop Rod
84		Downlock Plate
85		Uplock Plate
86	WT74059	Spring
87	WT74067	Spring
88		Guide
89		Stop Bracket Guide
90		Spring
91	WT26175	Play Key
92	WT26175	Record Key
93	WT26175	Pause Key
94		Side Plate - Left
95	WT88237	Idler Wheel Mounting Arm
96	WT74069	Spring
97	WT88187	Idler Wheel



BOTTOM VIEW OF MECHANISM



ELECTRICAL CHASSIS - BOTTOM VIEW

BIAS CURRENT ADJUSTMENT

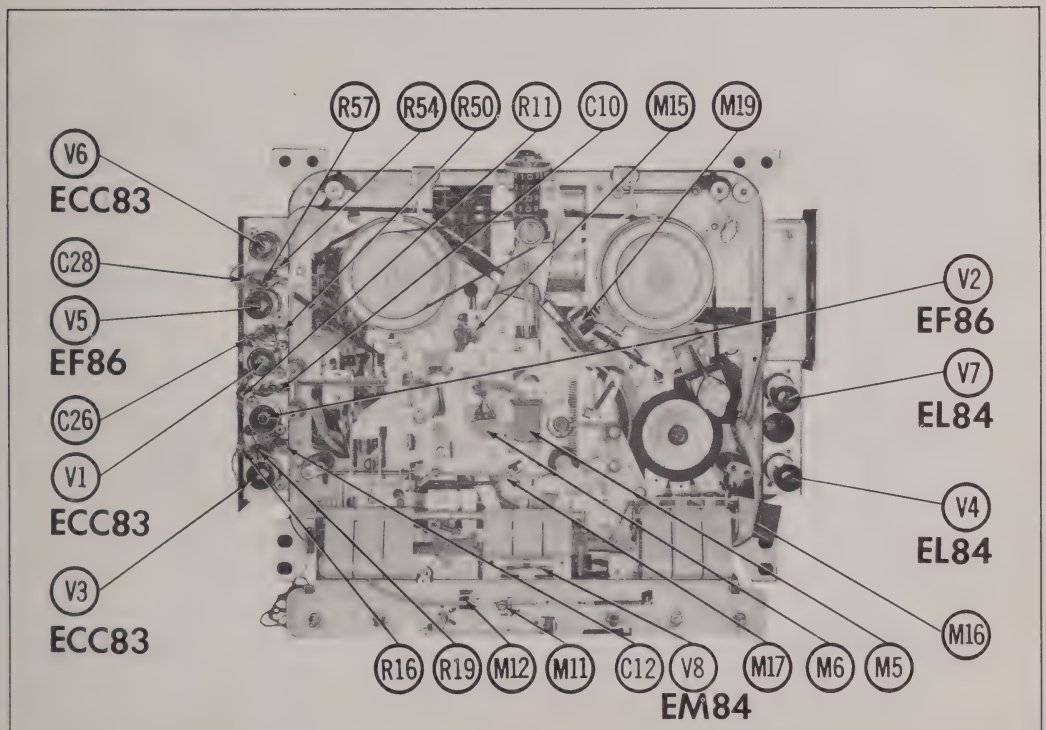
Connect DC probe of VTVM to point Ⓐ, Common to chassis. Set unit for Stereo Record and adjust A1 for 50 MV. Move DC probe to point Ⓑ. Adjust A2 for 50 MV on VTVM. Put cement or lacquer on capacitor threads after properly adjusted.

ADJUSTMENT OF MODULATION INDICATOR

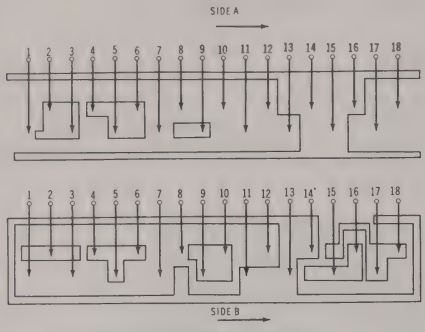
Connect the DC probe to point Ⓐ, Common to chassis. Apply a 1000 cycle signal at 100 MV to Left and Right inputs. Press 1-7/8 speed key. Adjust Radio/Phono Volume control for 13 MV on VTVM. Voltage at point Ⓑ should also be 13 MV. Adjust R6 so that the two green bands of the Modulation Indicator just touch the red band.

ADJUSTMENT OF THE FREQUENCY COMPENSATING NETWORK

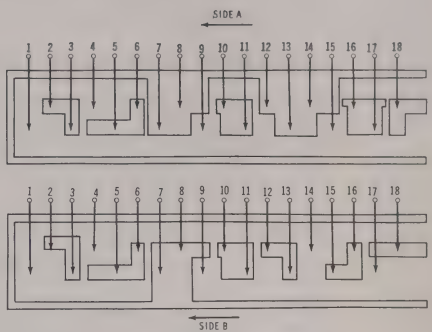
Short out the Oscillator coil L3. Apply a 1000 cycle signal to Left channel input. Connect the DC probe of VTVM to point Ⓐ, Common to chassis. Set recorder to Stereo/Record at 3-3/4 speed. Set Radio/Phono Volume control fully clockwise. Set Microphone Volume control fully counterclockwise. Adjust signal input level until VTVM reads 4.15 MV. (Signal generator output should be 45 MV ± 1.5 db.) Change signal frequency to 8000 cycles at 45 MV. Adjust A3 for 10 MV ± 1db. Seal core with lacquer. Follow same procedure for right channel connecting DC probe of VTVM to point Ⓑ and adjusting A4. Remove short from L3.



CHASSIS - TOP VIEW



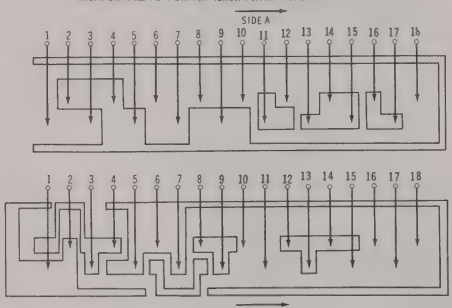
LEFT CHANNEL PLAY SWITCH (SHOWN WITH PUSHBUTTON UP.)



RECORD SWITCH
DEPRESSING PUSHBUTTON MOVES RECORD SWITCH ONE POSITION.

DEPRESSING PUSHBUTTON MOVES LEFT & RIGHT CHANNEL SWITCHES ONE POSITION.

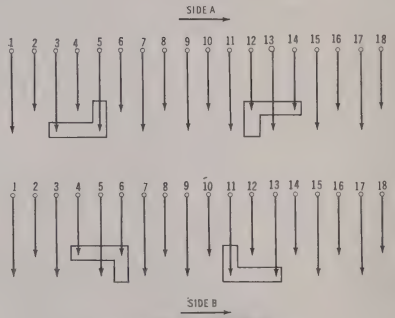
RIGHT CHANNEL PLAY SWITCH (SHOWN WITH PUSHBUTTON UP.)



MONAURAL 1 & 4 OR 2 & 3 SWITCH
SHOWN WITH TRACK SELECTOR IN PA OR STEREO POSITION.

MOVING TRACK SELECTOR TO MONAURAL 1 & 4 MOVES SWITCH ONE POSITION.

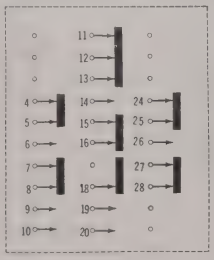
MOVING TRACK SELECTOR TO MONAURAL 2 & 3 MOVES SWITCH TWO POSITIONS.

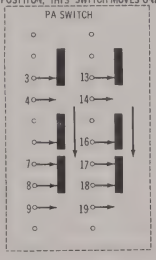


SPEED EQUALIZATION SWITCH
SWITCH NORMALLY IN 1 7/8 I.P.S. POSITION.

DEPRESSING 1 7/8 I.P.S. PUSHBUTTON TURNS SET ON ONLY
DEPRESSING 3 3/4 I.P.S. PUSHBUTTON TURNS SET ON AND MOVES SWITCH ONE POSITION.
DEPRESSING 7 1/2 I.P.S PUSHBUTTON TURNS SET ON AND MOVES SWITCH TWO POSITIONS.

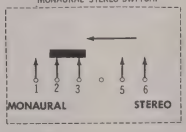
PA SWITCH
OPERATED BY TRACK SELECTOR SWITCH.
WHEN TRACK SELECTOR SWITCH MOVES FROM PA POSITION, THIS SWITCH MOVES ONE POSITION.





DUBBING SWITCH

MONAURAL-STEREO SWITCH.



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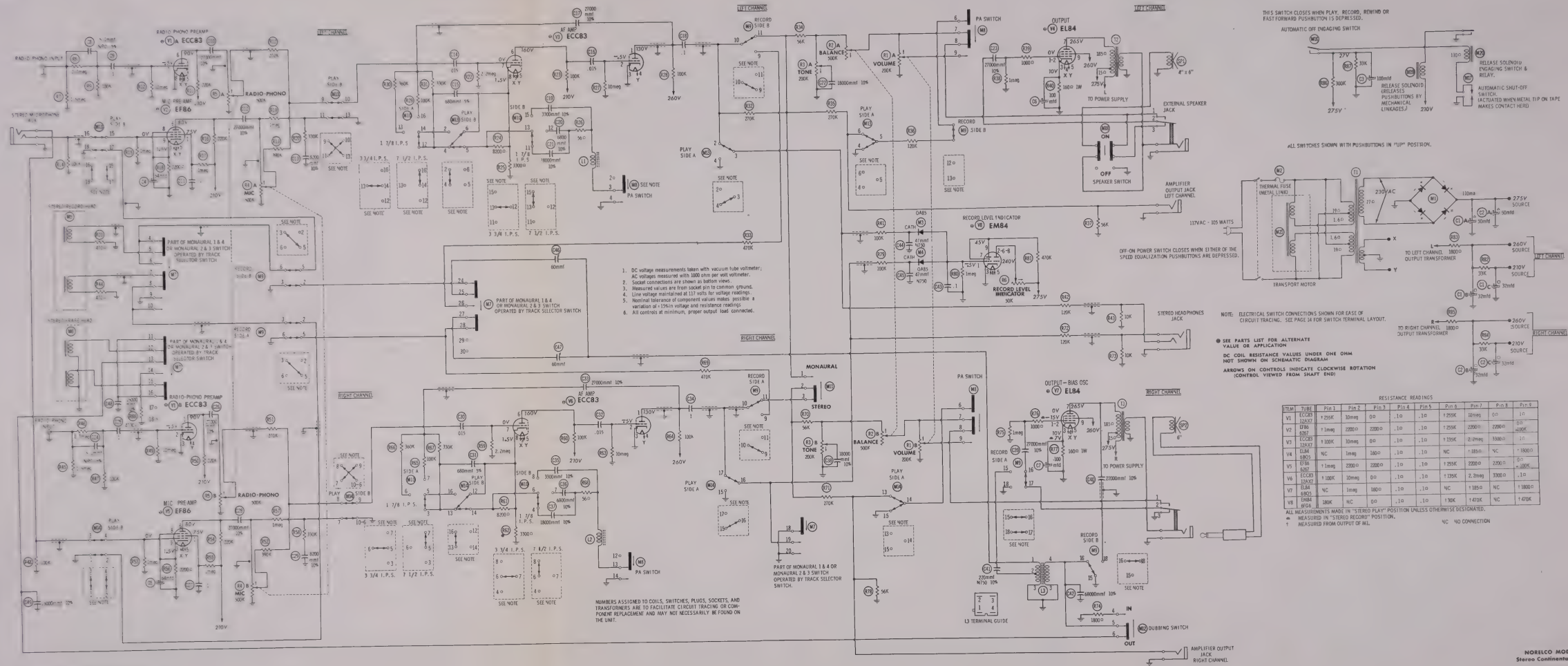
NORELCO MODEL
Stereo Continental 400

SWITCH DIAGRAM


RADIO PHONO PREAMP V1A ECC83
MIC PRE AMP V2 EF86
AF AMP V3 ECC83
RADIO-PHONO
MIC
LEFT CHANNEL
RIGHT CHANNEL
RECORD SIDE B
RECORD SIDE A
PLAY SIDE A
PLAY SIDE B
PA SWITCH
SEE NOTE
PART OF MONAURAL 1 & 4 OR MONAURAL 2 & 3 SWITCH OPERATED BY TRACK SELECTOR SWITCH
RADIO-PHONO PREAMP V1B ECC83
MIC PRE AMP V5 EF86
AF AMP V6 ECC83
MONAURAL
STEREO
BALANCE
TONE
VOLUME
OUTPUT EL84
OUTPUT – BIAS OSC V7 EL84
RECORD LEVEL INDICATOR V8 EM84
RECORD LEVEL INDICATOR
OFF
ON
SPEAKER SWITCH
EXTERNAL SPEAKER JACK
AMPLIFIER OUTPUT JACK LEFT CHANNEL
AMPLIFIER OUTPUT JACK RIGHT CHANNEL
STEREO HEADPHONES JACK
TO POWER SUPPLY
PART OF MONAURAL 1 & 4 OR MONAURAL 2 & 3 SWITCH OPERATED BY TRACK SELECTOR SWITCH.
L3 TERMINAL GUIDE
M12 DUBBING SWITCH
IN
OUT
1 7/8 I.P.S.
3 3/4 I.P.S.
7 1/2 I.P.S.
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings
6. All controls at minimum, proper output load connected.
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
THIS SWITCH CLOSES WHEN PLAY, RECORD, REWIND OR FAST FORWARD PUSHBUTTON IS DEPRESSED.
AUTOMATIC OFF ENGAGING SWITCH
RELEASE SOLENOID (RELEASES PUSHBUTTONS BY MECHANICAL LINKAGES)
RELEASE SOLENOID ENGAGING SWITCH & RELAY.
AUTOMATIC SHUT-OFF SWITCH. (ACTUATED WHEN METAL TIP ON TAPE MAKES CONTACT HERE)
ALL SWITCHES SHOWN WITH PUSHBUTTONS IN "UP" POSITION.
THERMAL FUSE (METAL LINK)
117VAC - 105 WATTS
TRANSPORT MOTOR
TO LEFT CHANNEL OUTPUT TRANSFORMER
TO RIGHT CHANNEL OUTPUT TRANSFORMER
OFF-ON POWER SWITCH CLOSES WHEN EITHER OF THE SPEED EQUALIZATION PUSHBUTTONS ARE DEPRESSED.
NOTE: ELECTRICAL SWITCH CONNECTIONS SHOWN FOR EASE OF CIRCUIT TRACING. SEE PAGE 14 FOR SWITCH TERMINAL LAYOUT.
● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83 12AX7	↑ 250K	10meg	0Ω	.1Ω	.1Ω	↑ 255K	10meg	0Ω	1Ω
V2	DY86 6267	↑ 1meg	2200Ω	2200Ω	.1Ω	.1Ω	↑ 255K	2200Ω	2200Ω	0Ω ▲100K
V3	ECC83 12AX7	↑ 100K	10meg	0Ω	.1Ω	.1Ω	↑ 235K	2.2meg	330Ω	1Ω
V4	EL84 6BQ5	¼C	1meg	160Ω	.1Ω	.1Ω	¼C	↑ 185Ω	¼C	↑ 1800Ω
V5	ET86 6267	↑ 1meg	2200Ω	2200Ω	.1Ω	.1Ω	↑ 255K	2200Ω	2200Ω	0Ω ▲100K
V6	ECC83 12AX7	↑ 100K	10meg	0Ω	.1Ω	.1Ω	↑ 235K	2.2meg	330Ω	1Ω
V7	EL84 6BQ5	¼C	1meg	160Ω	.1Ω	.1Ω	¼C	↑ 185Ω	¼C	↑ 1800Ω
V8	EM84 6FG6	180K	NC	0Ω	.1Ω	.1Ω	↑ 30K	↑ 470K	¼C	↑ 470K

ALL MEASUREMENTS MADE IN "STEREO PLAY" POSITION UNLESS OTHERWISE DESIGNATED.
▲ MEASURED IN "STEREO RECORD" POSITION.
↑ MEASURED FROM OUTPUT OF ML.
¼C NO CONNECTION

NORELCO MODEL Stereo Continental 400

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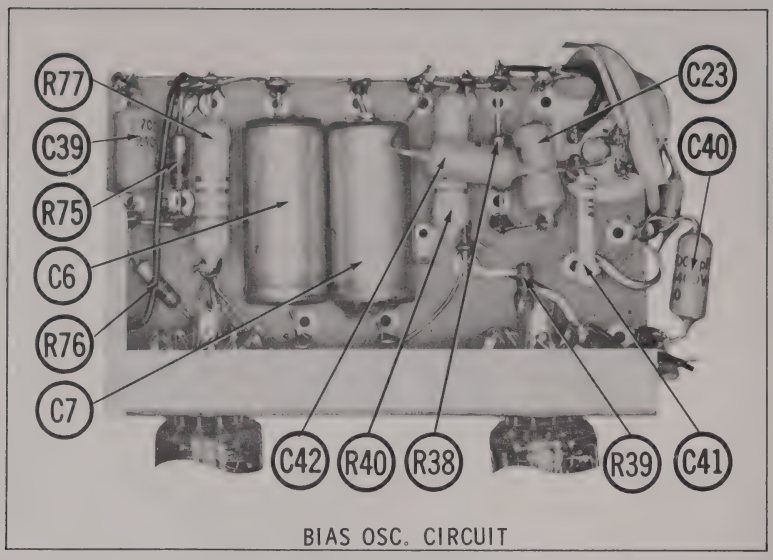
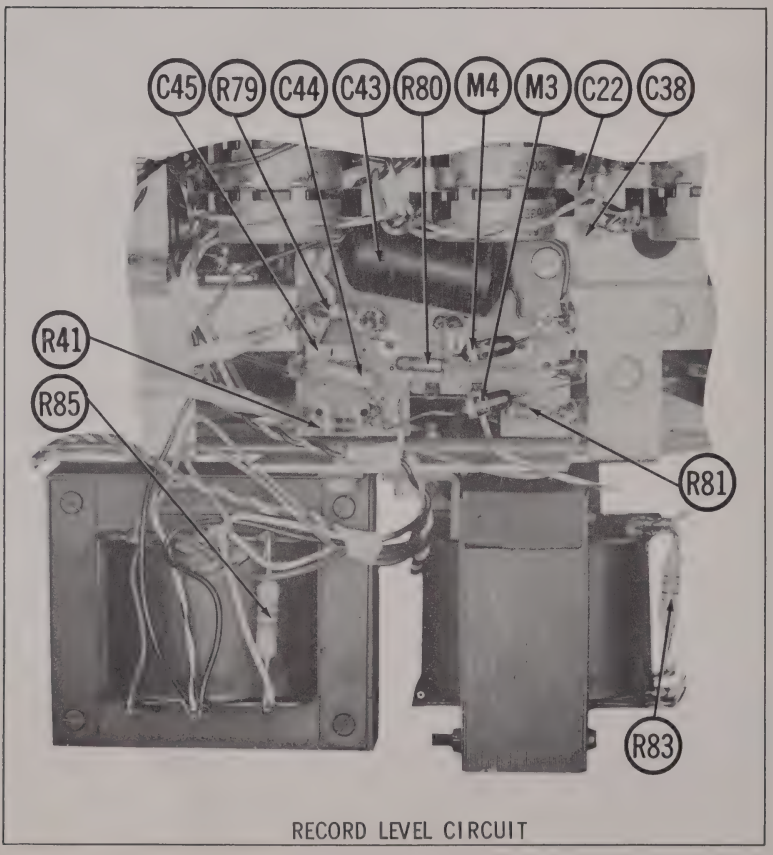


BIAS OSC. CIRCUIT



RECORD LEVEL CIRCUIT

ELECT. PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •)
V1	Left Channel Radio-Phono Preamplifier — Right Channel Radio-Phono Preamplifier	ECC83/12AX7
V2	Left Channel Mic Preamp.	EF86/6267
V3	Left Channel AF Amp.	ECC83/12AX7
V4	Left Channel Output	EL84/6BQ5
V5	Right Channel Mic Preamp.	EF86/6267
V6	Right Channel AF Amp.	ECC83/12AX7
V7	Right Channel Output-Bias Oscillator	EL84/6BQ5
V8	Record Level Indicator	EM84/6FG6

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA NORELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲50	350	AC5483/50+32+32						
B	■32	350							
C	▬32	350							
C2A	▲50	350	AC5483/50+32+32						
B	■32	350							
C	▬32	350							
C3	100	30	A460D	PRS1360	BR1005	TC3501	TD-100-50	TVA-1310	
C4	64	60		PRS1490	BR6015	TC68	TD-80-150	TVA-1415	
C5	64	60		PRS1490	BR6015	TC68	TD-80-150	TVA-1415	
C6	100	30	A460D	PRS1360	BR1005	TC3501	TD-100-50	TVA-1310	
C7	100	30	A460D	PRS1360	BR1005	TC3501	TD-100-50	TVA-1310	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C8	5.1 NPO 5%		NPO-SI 5.0		C10V5C	CCTO-050		10TCC-V50
C9	.1 250V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C10	27000 10%				DPMS6S27	6DP-3-273		6PS-S27
C11	.1 500V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C12	27000 10%				DPMS6S27	6DP-3-273		6PS-S27
C13	8200 10%				DPMS6D82	CCD-822	GEM-16282	6PS-D82
C14	.015 500V		P688N-015	DD-153	CUB6S15	6DP-2-153	GEM-6115	6TM-S15
C15	680 5%				5R5T68	CM-19B-681J	MCJ249	MS-368
C16	.015 500V		P688N-015	DD-153	CUB6S15	6DP-2-153	GEM-6115	6TM-S15
C17	27000 10%				DPMS6S27	6DP-3-273		6PS-S27
C18	.1 500V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C19	3300 10%				PM6D33	CCD-332	JL-233	10TS-D33
C20	6800 10%				PM6D68	CCD-682	MCJ468	10TS-D68
C21	18000 10%				DPMS6S2	6DP-2-203	GEM-1612	6PS-S20
C22	18000 10%				DPMS6S2	6DP-2-203	GEM-1612	6PS-S20
C23	27000 10%				DPMS6S27	6DP-3-273		6PS-S27
C24	5.1 NPO 5%		NPO-SI 5.0		C10V5C	CCTO-050		10TCC-V50
C25	.1 250V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C26	27000 10%				DPMS6S27	6DP-3-273		6PS-S27
C27	.1 500V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C28	27000 10%				DPMS6S27	6DP-3-273		6PS-S27
C29	8200 10%				DPMS6D82	CCD-822	GEM-16282	6PS-D68
C30	.015 500V		P688N-015	DD-153	CUB6S15	6DP-2-153	GEM-6115	6TM-S15
C31	680 5%				5R5T68	CM-19B-681J	MCJ249	MS-368
C32	.015 500V		P688N-015	DD-153	CUB6S15	6DP-2-153	GEM-6115	6TM-S15
C33	27000				DPMS6S27	6DP-3-273		6PS-S27
C34	.1 500V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C35	3300 10%				PM6D33	CCD-332	JL-233	10TS-D33

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C36	6800 10%				PM6D68	CCD-682	GEM-16268	10TS-D68
C37	18000 10%				DPMS6S2	6DP-2-203	GEM-1612	6PS-S20
C38	18000 10%				DPMS6S2	6DP-2-203	GEM-1612	6PS-S20
C39	27000 10%				DPMS6S27	6DP-3-273		6PS-S27
C40	22000 10%				DPMS6S22	6DP-2-223	GEM-16122	6TM-S22
C41	220 N750 10%		N750-SI 220	TCN-220	C10T22U	CCTN-221	CN7-322	10TCU-T22
C42	68000 10%				DPMS6S68	6DP-4-683		6TM-S68
C43	.1 125V		P488N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C44	47 N750		N750-SI 47	TCN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C45	47 N750		N750-SI 47	TCN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C46	60	#908/60E		823-BN		423		
C47	60	#908/60E		823-BN		423		
C48	15000 10%				PM6S15	6DP-2-153		6TM-S15
C49	15000 10%				PM6S15	6DP-2-153		6TM-S15

Norelco Part Number (Nominal Value).

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA NORELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	200K		B83151I/37					Volume, Left Channel
B	200K							Volume, Right Channel
R2A	500K		B163829					Balance, Left Channel
B	500K							Balance, Right Channel
R3A	200K		WT80835					Tone, Left Channel
B	200K							Tone, Right Channel
R4A	500K		B83151I/36					Mic., Left Channel
B	500K							Mic., Right Channel
R5A	500K		B83151I/36					Radio/Phono, Left Channel
B	500K							Radio/Phono, Right Channel
R6	50K		E097AE/50K					Record Indicator Level

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS	ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R7	1.5meg				R26	56Ω			
R8	2.7meg				R27	10meg			
R9	100K				R28	100K			
R10	10meg				R29	100K			
R11	220K				R30	360K			
R12	270K				R31	330K			
R13	390K				R32	270K			
R14	100K				R33	470K			
R15	1meg				R34	56K			
R16	220K				R35	270K			
R17	1meg				R36	120K			
R18	2200Ω				R37	56K			
R19	1meg				R38	1meg			
R20	330K				R39	1000Ω			
R21	470Ω				R40	160Ω 1W			
R22	2.2meg				R41	100K			
R23	100K				R42	120K			
R24	8200Ω				R43	10K			
R25	3300Ω				R44	470Ω			

ELECT. PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R45	1.5meg				R67	360K			
R46	2.7meg				R68	56Ω			
R47	100K				R69	470K			
R48	100K				R70	56K			
R49	10meg				R71	270K			
R50	220K				R72	120K			
R51	270K				R73	10K			
R52	390K				R74	1800Ω			
R53	1meg				R75	1meg			
R54	220K				R76	1000Ω			
R55	1meg				R77	160Ω 1W			
R56	2200Ω				R78	56K			
R57	1meg				R79	100K			
R58	330K				R80	1meg			
R59	2.2meg				R81	470K			
R60	100K				R82	33K			
R61	8200Ω				R83	1800Ω			
R62	3300Ω				R84	33K			
R63	10meg				R85	1800Ω			
R64	100K				R86	300K			
R65	100K				R87	33K			
R66	330K				R88	4700Ω			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		NORELCO PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	RF Choke	5668153					
L2	RF Choke	5668153					
L3	Bias Osc.	WT56186					

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.[1]	SEC. 1	SEC. 2	NORELCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V@ .5A	230V@ .200A AC	6.3VCT @3.4A	WT51105					
	PRI. 2								
	117V@ .5A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	NORELCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	5300Ω Tap@ 7.5K	3-4Ω	WT51122					
T3	5300Ω Tap@ 7.5K	3-4Ω	WT51122					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	NORELCO PART No.	QUAM PART No.	
SP1	4"x 6"	PM	3-4Ω	LD3461X-01	46A07	
SP2	6"	PM	3-4Ω	AD1720		

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	NORELCO PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.110A	SR250 B/125				

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			NORELCO PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	Metal Link		WT51105					

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		NORELCO PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M3	0A85	0A85 *		1N60 *	1N60 *	* Record Level Indicator (Pigtail)
M4	0A85	0A85 *		1N60 *	1N60 *	

MISCELLANEOUS

ITEM No.	PART NAME	NORELCO PART No.	NOTES
M5	Head	A387024	Record-Playback
M6	Head	WT85549	Erase
M7	Switch	WT88718	Selector
M8	Switch	WT88719	Selector
M9	Switch	WT88717	Record
M10	Switch	WT88714	Speed Equalization
M11	Switch	WT88705	Monaural
M12	Switch	WT88705	Dubbing
M13	Switch	WT88715	Playback (Left Channel)
M14	Switch	WT88716	Playback (Right Channel)
M15	Switch	WT83729	Auto Off
M16	Switch	A986912	Power Off-On
M17	Switch		Auto Stop (Operated by metal end of tape)
M18	Switch	970/29	Speaker Selector (DPDT, Slide Type)
M19	Relay	WT88291	
M20	Relay	WT88293	
M21	Motor	JW 31560	Drive

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	WT26185	Footage Indicator
Knob	WT26183	Tone
Knob	WT26190	Tone
Knob	WT26191	Microphone, Radio/Phono, Selector, Volume, Balance
Knob	WT26181	Sliding
Knob	WT88825	
Pushbutton	WT26170	Rewind, Stop, Fast Forward
Pushbutton	WT26175	Play, Record, Pause, 1 7/8, 3 3/4, 7 1/2
Cover	WT85541	Cabinet
Handle	A986974	Cabinet
Cabinet	WT85568	

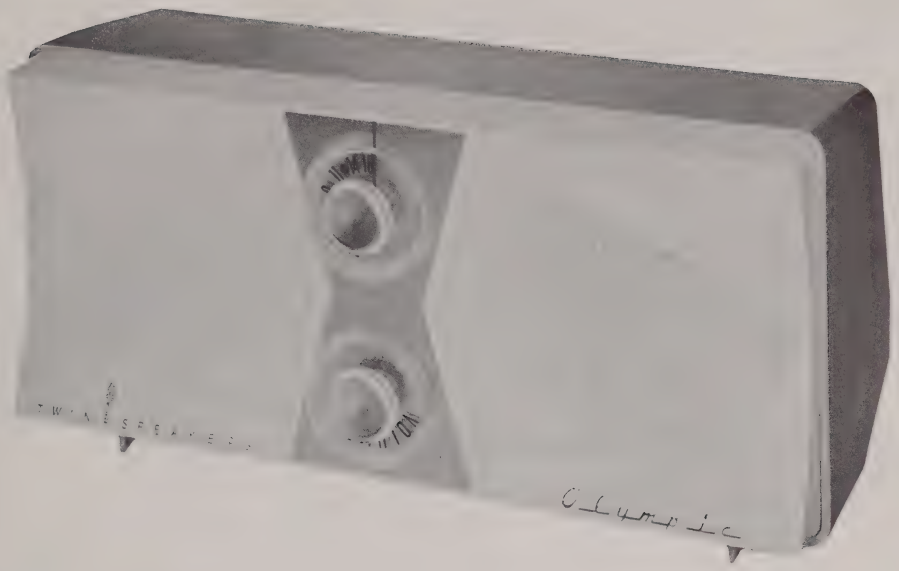
WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder

OLYMPIC
MODEL 556

OLYMPIC
MODEL 556



OLYMPIC
MODEL 556

TRADE NAME	Olympic Model 556
MANUFACTURER	Olympic, A Div. of the Siegler Corp., 34-01 38th Ave., Long Island City 1, N. Y.
TYPE SET	AC-DC Operated 5 Tube AM Receiver
POWER SUPPLY	110 – 120 Volts AC-DC
TUNING RANGE—BROADCAST	540 – 1650KC RATING 18 Watts, .2 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1 thru A4...GENERAL CEMENT #5097, 8727
WALSCO #2515
A5, A6..... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to antenna stator lug of tuning gang. Low side to chassis.	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	"	1650KC	"	"	A5	"
3.	Loop	1500KC	1500KC Signal.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat Steps 2 and 3.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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KG407

SET 528 FOLDER 10

PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

ITEM No.	USE	TYPE
V1	Converter	12BE6
V2	IF Amplifier	12BA6
V3	Det. -AVC-AF Amp.	12AV6
V4	Output	50C5
V5	Rectifier	35W4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA OLYMPIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	70	150	COH30279	PRS2230	BBRD8415	WD220	TDLD-10	TVA-2461	
B	30	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	10 N330					*		10TCS-Q10
C3	47 N750 10%	(220) †	N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C4	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C5	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C6	.02 400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S20
C7	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C8	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C9	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10

† Alternate Value.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA OLYMPIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	PTH30282	B-60-S	A47-500K-Z	Bl3-133	U48	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	US-26	Power Off-On

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

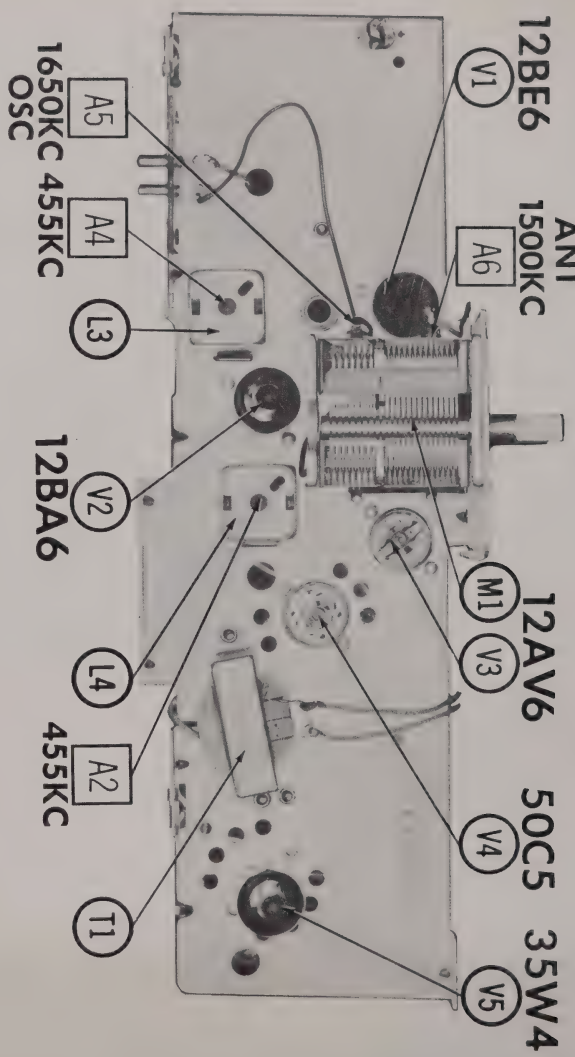
ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	22K			
R3	2.2meg			
R4	2.2meg			
R5	150Ω			

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R6	6.8meg			
R7	150Ω			
R8	1500Ω 1W			

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	OLYMPIC PART No.	REPLACEMENT DATA
K1	Audio Coupling	250mmf, 5000mmf, 250K, 470K	PPH30257	Aerovox PA-112-2 Centralab PC-71 Sprague T-4

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		OLYMPIC PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	Loopstick	LPH30280	BC-419	2004		
L2	Osc.	CLH30281	BC-393	69-OSC	RTC-8646	
L3	Input IF	TRH30237	BC-352	12-C1	RTC-8632	
L4	Output IF	TRH30237	BC-353	12-C2	RTC-8633	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	OLYMPIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	4000Ω	1.6Ω	TRH30286	A-3025	A-3332	24S53	S-20X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	OLYMPIC PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	SKH30285	4A05	
SP2	4"	PM	3-4Ω	SKH30285	4A05	

MISCELLANEOUS

ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
M1	Tuning Cap.	CVH30278	2 Gang (Ant. 14—356mmf, Osc. 15—115mmf)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

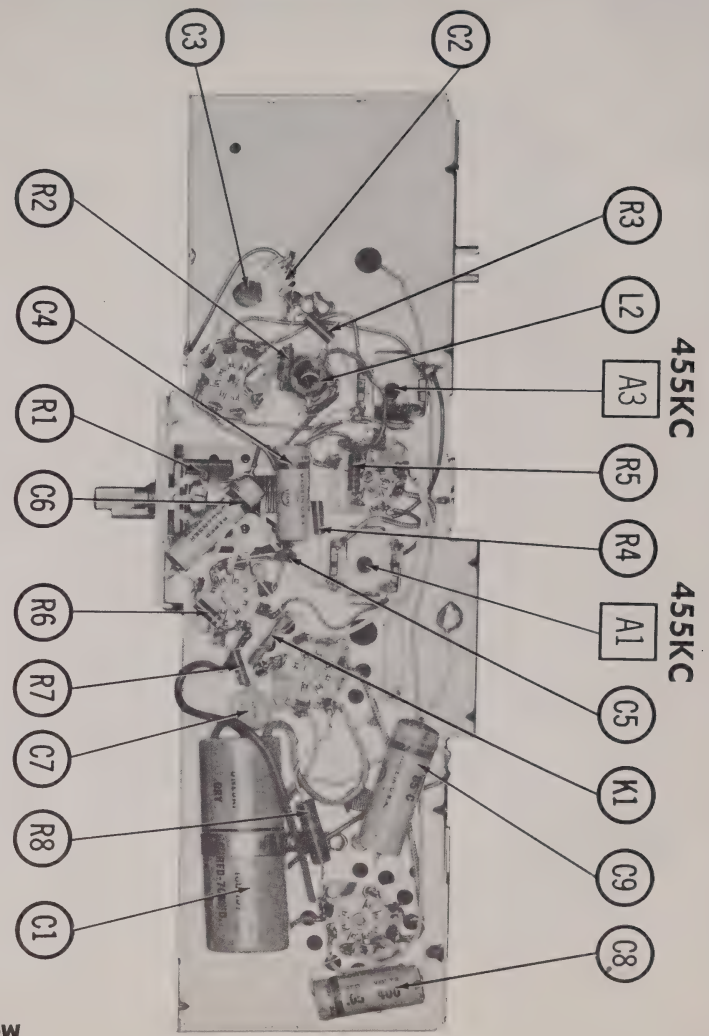
NAME	PART NO.	DESCRIPTION
Knob	KNH30283	Tuning
Knob	KNH30284	Volume

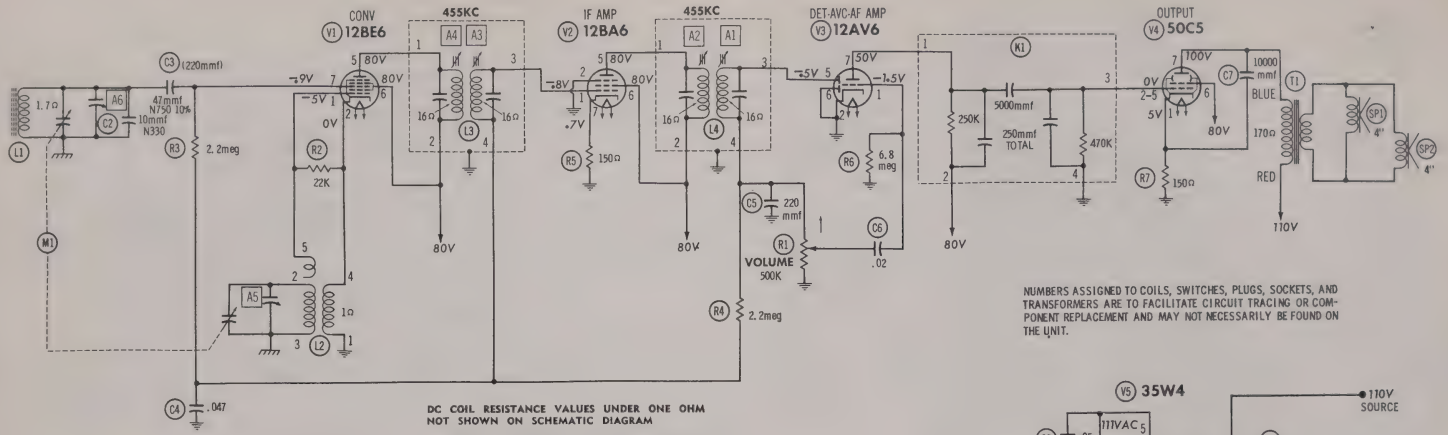
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874

CHASSIS—BOTTOM VIEW

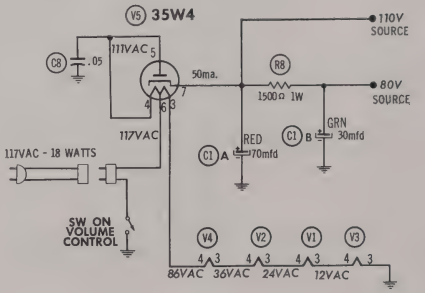


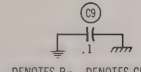


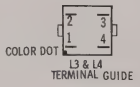
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.







RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	1Ω	15Ω	30Ω	†1500Ω	†1500Ω	5meg
V2	12BA6	2.7meg	0Ω	30Ω	45Ω	†1500Ω	†1500Ω	150Ω
V3	12AV6	6.8meg	0Ω	0Ω	15Ω	500K	0Ω	†250K
V4	50C5	150Ω	470K	45Ω	115Ω	NC	†1500Ω	†170Ω
V5	35W4	TP	TP	15Ω	163Ω	163Ω	160Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5. NC NO CONNECTION TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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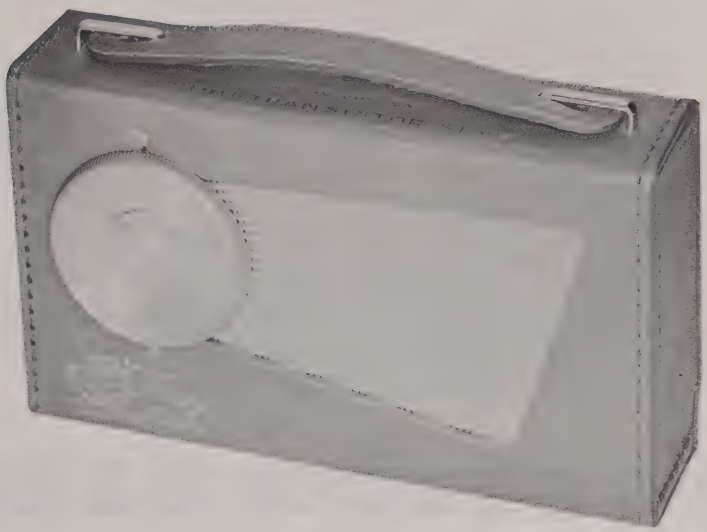
OLYMPIC MODEL 556

PHOTOFACT® Folder with CIRCUITRACE®

PERDIO MODEL
Super 7

PERDIO MODEL
Super 7



PERDIO MODEL
Super 7

TRADE NAME	Perdio Model Super 7		
SUPPLIER	Radio Shack Corp., 730 Commonwealth Ave., Boston 17, Massachusetts		
TYPE SET	Battery Operated Transistorized Portable BC-LW Receiver		
POWER SUPPLY	9 Volts DC	RATING	7MA @ 9 Volts DC (No Signal, Min. Volume) 15MA @ 9 Volts DC (Signal, Normal Volume)
TUNING RANGE	BROADCAST 525 - 1554KC	LONG WAVE	230 - 395KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1 thru A4, A6 ... GENERAL CEMENT #9440
A5, A7, A8 ..... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	470KC (400~ Mod.)	(BC) Tuning gang fully open	Across Voice Coil	A1, A2, A3, A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1500KC	1500KC	"	A5	"
3.	"	600KC	600KC	"	A6	"
4.	"	1400KC	1400KC	"	A7	"
5.	"	395KC	395KC (LW)	"	A8	Adjust for maximum output. Repeat steps 2 thru 4.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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KF383

SET 528 FOLDER 11

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	OC44	Converter		2N486	2N412	PNP
X2	OC45	1st IF Amplifier		2N483	2N410	PNP
X3	OC45	2nd IF Amplifier		2N483	2N410	PNP
X4	OC71	AF Amplifier	2N406	2N362	2N406	PNP
X5	OC81D	Driver				
X6	OC81	Output				PNP
X7	OC81	Output				PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	PERDIO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	10	3		PTT-3010	NLW10-6	TT3X10	MLV10-3	TE-1053	
C2	100	3		PTT-3100	NLW100-3	TT6X100	MLV100-3	TE-1059.5	
C3	100	12		SRE12V100	NLW100-12	TT15X100	MLV100-12	TE-1135	
C4	100	12		SRE12V100	NLW100-12	TT15X100	MLV100-12	TE-1135	
C5	50	12		PTT-12050	NLW50-15	TT15X50	MLV50-12	TE-1133	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REMARKS	REPLACEMENT DATA					
				AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	3			NPO-SI 3.3	TCZ-3R3	C10V3	CCTO-3R3	CNO-533	10TCC-V33
C7	680	5%				5R5T68	CM-19B-68IJ	MCJ249	MS-368
C8									
C9	134	2%							
C10	286	2%							
C11	10000				DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C12	4.7 N750	5%		N750-SI 5	TCN-5	C10V5U	CCTN-050	CN7-547	10TCU-V50
C13	.04	150V			DD-403		4DP-3-403	GEM-414	4PS-S40
C14	.04	150V			DD-403		4DP-3-403	GEM-414	4PS-S40
C15	56			SI 56	D6-560	L10Q56	CCD-560	GP456	10TS-Q56
C16	.1	150V		V84C2P1		DPMS2P1	2DP-3-104	GEM-201	2PS-P10
C17	.1	150V		V84C2P1		DPMS2P1	2DP-3-104	GEM-201	2PS-P10
C18	10			SI 10	D6-100	L10Q1	CCD-100	GP410	10TS-Q10
C19	.1	150V		V84C2P1		DPMS2P1	2DP-3-104	GEM-201	2PS-P10

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	PERDIO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	2500Ω	1/10						Volume and Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	3300Ω				R12	10K			
R3	5600Ω				R13	470Ω			
R4	100K				R14	100Ω			
R5	1200Ω				R15	3300Ω			
R6	1000Ω				R16	100Ω			
R7	1090Ω				R17	3300Ω			
R8	3900Ω				R18	100K			
R9	1000Ω				R19	4700Ω			
R10	1000Ω				R20	470Ω			
R11	6800Ω								

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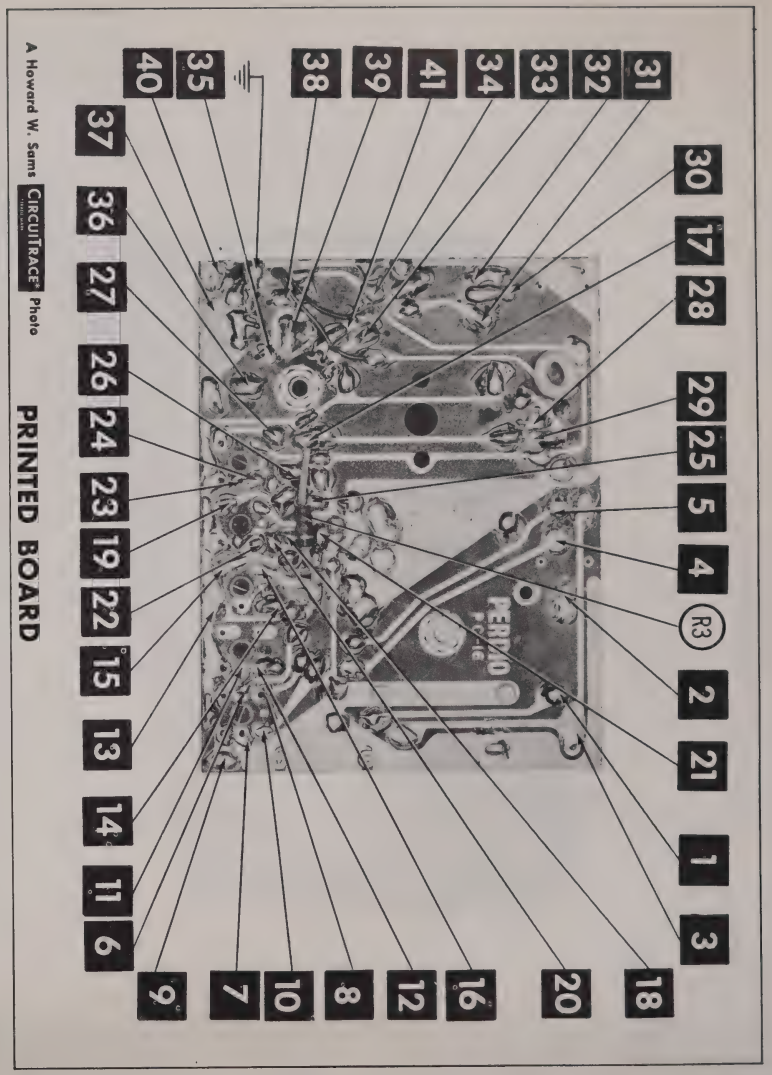

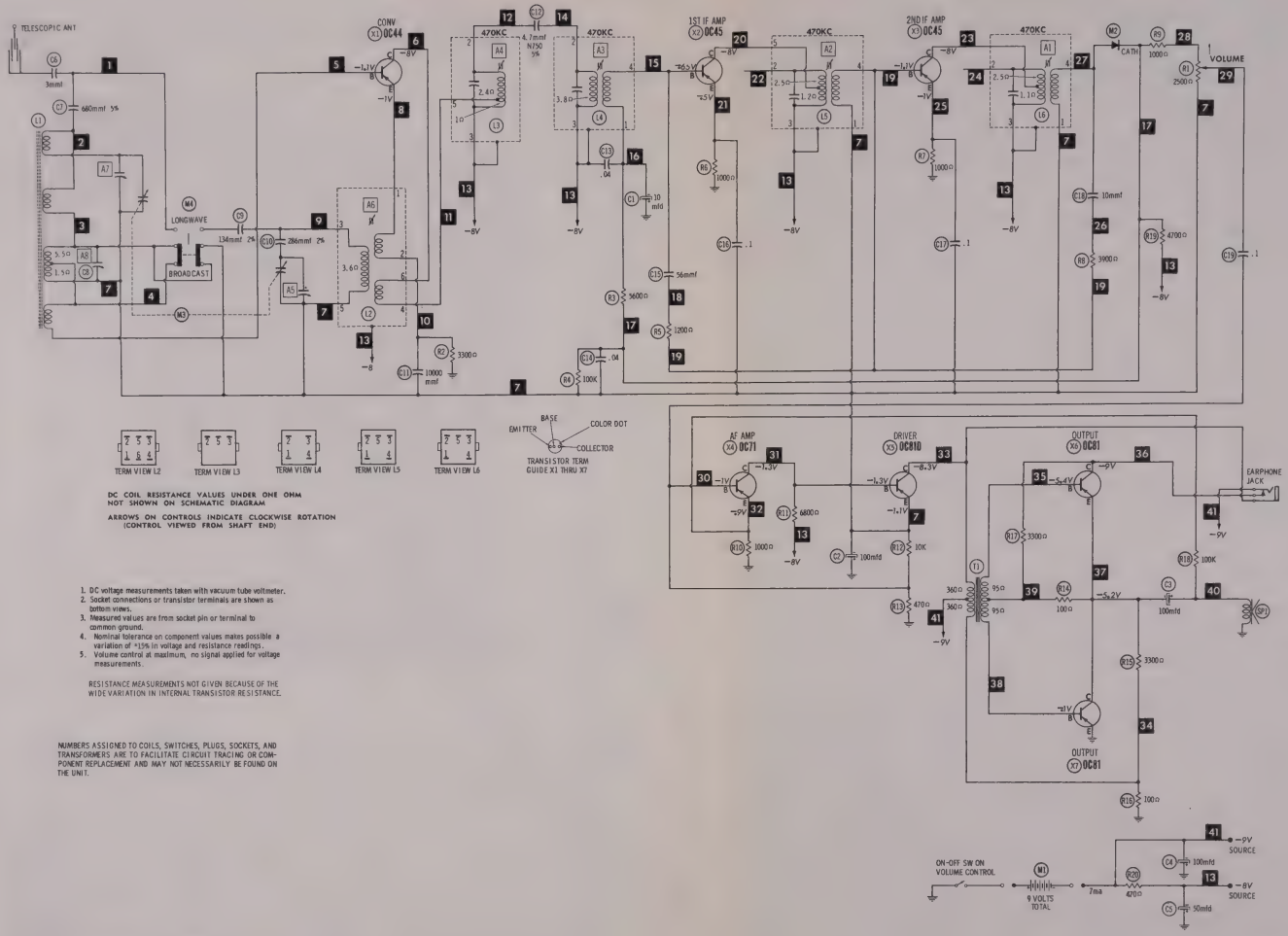

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

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PERDIO MODEL Super 7

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		PERDIO PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1A	BC Loopstick						
B	LW Loopstick						
L2A	BC Osc.						
B	LW Osc.						
L3	1st IF						
L4	2nd IF						
L5	3rd IF						
L6	4th IF						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	PERDIO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.5	1						

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	PERDIO PART No.	QUAM PART No.	
SP1	3"	PM	30-40Ω			

BATTERIES

ITEM No.	VOLTAGE	PERDIO PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V			2N6		246		M-1602	

SIGNAL DIODES

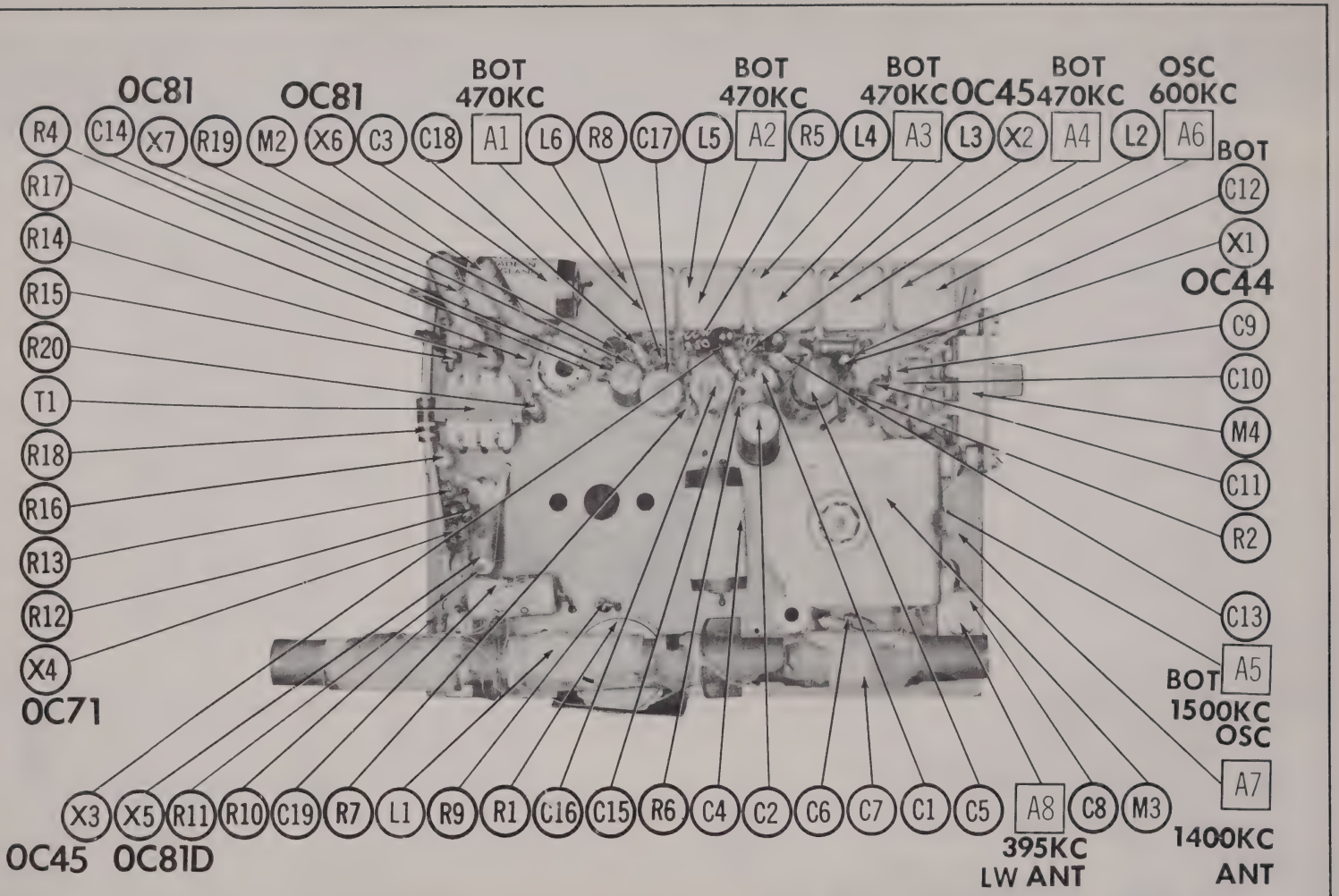
ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		PERDIO PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2				1N60	1N60	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	PERDIO PART No.	NOTES
M3	Tuning Cap.		2 Gang
M4	Switch		Band Selector (DPDT Slide Type)

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors



CHASSIS TOP VIEW

PHOTOFACT® Folder with CIRCUITRACE®

PHILCO MODEL T-70-124

PHILCO MODEL T-70-124

PHILCO MODEL T-70-124

TRADE NAME	Philco Model T-70-124		
MANUFACTURER	Philco Corp., Tioga & C Streets, Philadelphia, Pa.		
TYPE SET	Battery Operated Transistorized Portable AM Receiver		
POWER SUPPLY	3 Volts DC	RATING	10MA @ 3 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	535-1620KC		20MA @ 3 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1, A2, A3... GENERAL CEMENT #8607, 9291, 9294
WALSCO #2520, 2522, 2523, 2524, 2534, 2537
A4..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5, A6..... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to antenna stator lug of tuning gang. Low side to chassis.	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Adjust for maximum output.
2.	Loop	600KC	600KC	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	1620KC	Tuning gang fully open.	"	A5	"
4.	"	1400KC	1400KC Signal.	"	A6	Adjust for maximum output. Repeat Steps 2, 3 and 4.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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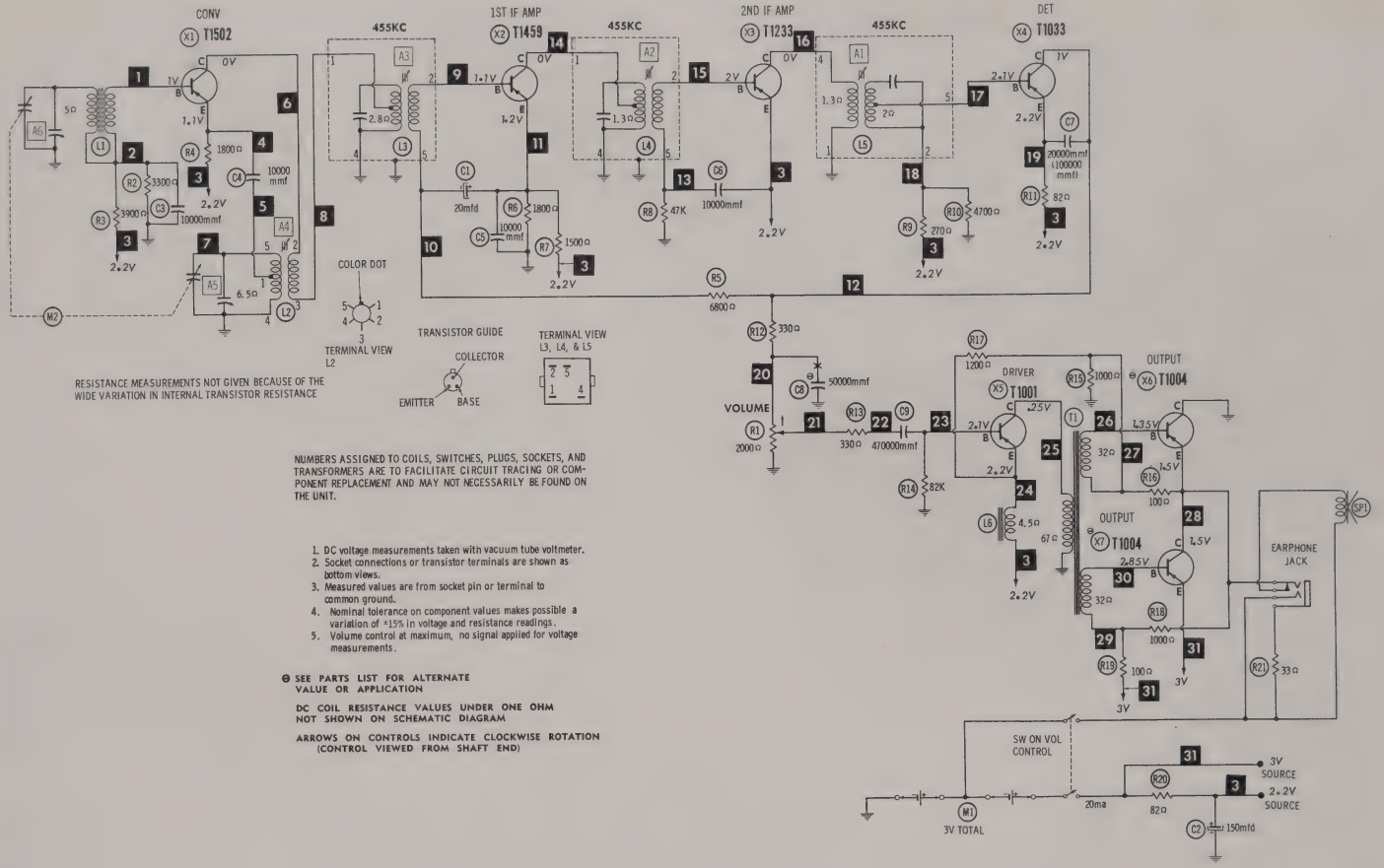
KF248

SET 528 FOLDER 12



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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PHILCO MODEL T-70-124

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	T1502	Converter				PNP
X2	T1459	1st IF Amplifier				PNP
X3	T1233	2nd IF Amplifier				PNP
X4	T1033	Detector				PNP
X5	T1001	Driver	2N406		2N406	PNP
X6	T1004 ①	Output	2N270			PNP ⎫ Matched
X7	T1004 ①	Output	2N270			PNP ⎭ Pair

① Alternate Type T-1008.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	20	3	30-2599-10	BCD3020	ECPB10	PET1570		VL-1040	
C2	150	3	30-2599-19	BCD3150	ECPB19			VL-1055	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	10000		BPD-01	DM-103	H-0581	CCD-103	TA-110	TG-S10
C4	10000		BPD-01	DM-103	H-0581	CCD-103	TA-110	TG-S10
C5	10000		BPD-01	DM-103	H-0581	CCD-103	TA-110	TG-S10
C6	10000		BPD-01	DM-103	H-0581	CCD-103	TA-110	TG-S10
C7	20000	(100000) †	C80V-203AM	DA-203	H-0582	CCD-203	TA-120	TG-S20
C8	50000	Note 1	C80V-503AM	UK10-503	H-0585		TA-150	TG-S50
C9	470000	#30-1279-4		UK10-474				

Note 1. Not used in some versions.
† Alternate Value.
# Philco Part Number.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	2000Ω	1/4	33-5583-18					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA		REMARKS
		IRC PART No.	WORKMAN TV PART No.	
R2	3300Ω			
R3	3900Ω			
R4	1800Ω			
R5	6800Ω			
R6	1800Ω			
R7	1500Ω			
R8	47K			
R9	270Ω			
R10	4700Ω			
R11	82Ω			

ITEM No.	RATING	REPLACEMENT DATA		REMARKS
		IRC PART No.	WORKMAN TV PART No.	
R12	330Ω			
R13	330Ω			
R14	82K			
R15	1000Ω			
R16	100Ω			
R17	1200Ω			
R18	1000Ω			
R19	100Ω			
R20	82Ω			
R21	33Ω			

PRINTED BOARD

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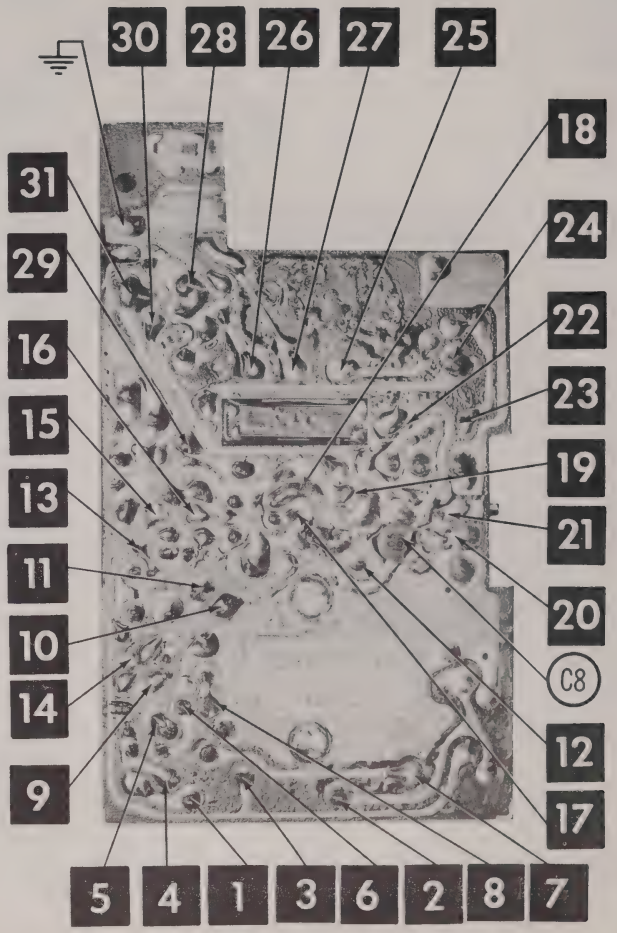


PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		PHILCO PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	Loopstick	76-10946-1				
L2	Osc. Coil	32-4669-2				
L3	1st IF Trans.	32-4775-6				
L4	2nd IF Trans.	32-4775-7				
L5	3rd IF Trans.	32-4775-8				
L6	RF Choke(400uh)	32-4685-1	TV-202	6136	RTC-8579	

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.[1]	PHILCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.5	1	32-8885-1					
		SEC. 2						
		1						

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	PHILCO PART No.	QUAM PART No.	
SP1	2 3/4"	PM	6-8Ω	36-1664-9	27A06Z8	

BATTERIES

ITEM No.	VOLTAGE	PHILCO PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	P-15 *		930 *		1015 *		M-15R *	* 2 Required

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M2	Tuning Cap. Printed Board	31-2782-1 54-6907-2	2 Gang (Ant. 12-137mmf, 19-90mmf)

CABINETS & CABINET PARTS

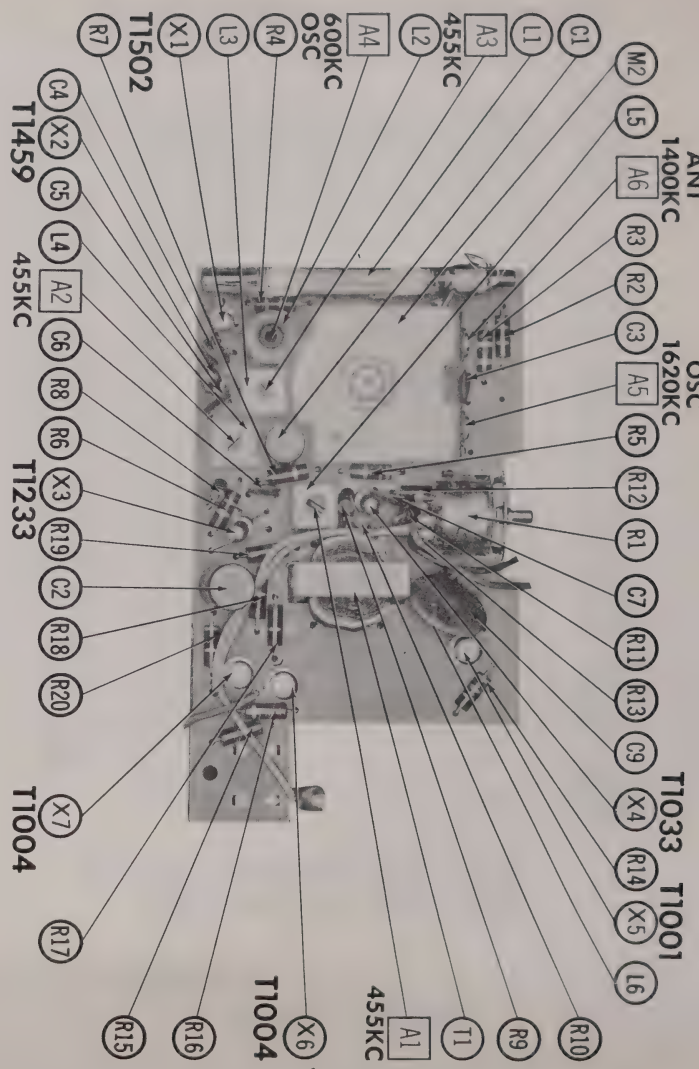
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	54-6911-4	Tuning
Knob	54-6912	Volume
Cabinet	424-8103	Assembly, Ivory
Cabinet	424-8104	Assembly, Ebony
Cabinet	424-8112	Assembly, Terra cotta
Handle	28-12724-3	Cabinet

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



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SILVERTONE MODEL 1201 (Ch. 132.60201)

SILVERTONE MODEL
1201 (Ch. 132.60201)

SILVERTONE MODEL
1201 (Ch. 132.60201)

TRADE NAME	Silvertone Model 1201 (Ch. 132.60201)
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan Ave., Chicago, Illinois
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	9 Volts DC
TUNING RANGE—BROADCAST	540 — 1650KC RATING 17 MA@ 9 Volts DC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1, A2, A3... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A4, A6..... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538
A5..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Highi side thru .05mfd to antenna stator lug of tuning gang. Low side to chassis.	455KC (400% Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Adjust for maximum output.
2.	Loop	1670KC	"	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	600KC	600KC	"	A5	"
4.	"	1400KC	1400KC Signal.	"	A6	Adjust for maximum output. Repeat Steps 2, 3, and 4.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KF458

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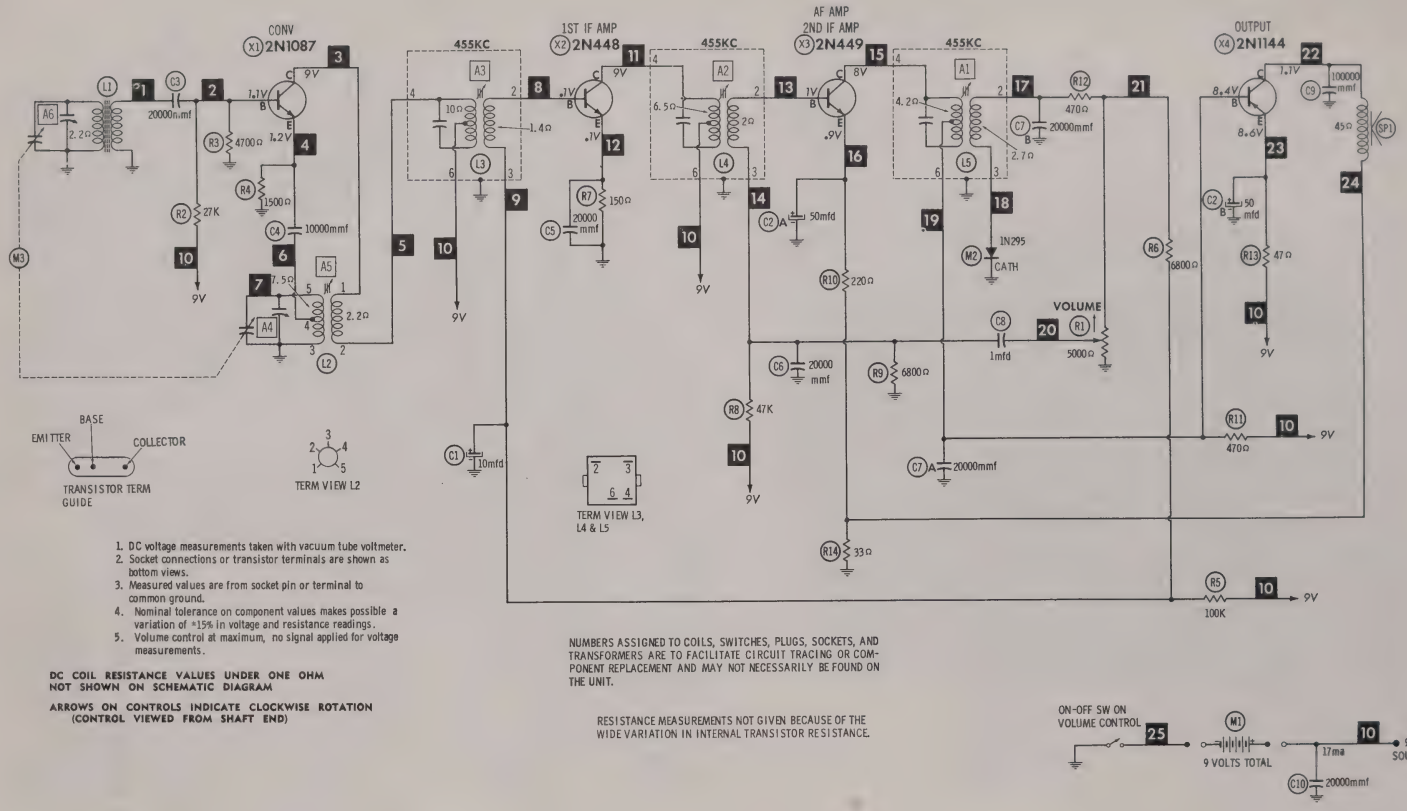
SET 528 FOLDER 13



1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE®

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SILVERTONE MODEL 1201 (Ch. 132.60201)

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N1087	Converter		2N1367		NPN
X2	2N448	1st IF Amplifier				NPN
X3	2N449	2nd IF Amplifier - AF Amplifier				NPN
X4	2N1144	Output	2N408			PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	10	10	44396-4	PTT-10010	NLW10-15	TT12X10	MLV10-10	TE-1114	
C2A	50	10	45719-2	BCD10X5050	ECPAN5	PET2370	MLV50-10	VL-2250	
B	50	10					MLV50-10		

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	20000		C80V203AM	DDM-203	H-05S2	CCD-203	TA-120	TG-S20
C4	10000		C80V103AM	DDM-103	H-05S1	CCD-103	TA-103	TG-S10
C5	20000		C80V203AM	DDM-203	H-05S2	CCD-203	TA-120	TG-S20
C6	20000		C80V203AM	DDM-203	H-05S2	CCD-203	TA-120	TG-S20
C7A	20000		C80V203AM	DDM-203	H-05S2	CCD-203	TA-120	TG-S20
B	20000		C80V203AM	DDM-203	H-05S2	CCD-203	TA-120	TG-S20
C8	1mfd 3V	#44684-9		UK-105				
C9	10000 10V		C80V104AM	UK10-104	H-05P1		TA-010	TG-P10
C10	20000		C80V203AM	DDM-203	H-05S2	CCD-203	TA-120	TG-S20

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/4	45000-7					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	27K				R9	6800Ω			
R3	4700Ω				R10	220Ω			
R4	1500Ω				R11	470Ω			
R5	100K				R12	470Ω			
R6	6800Ω				R13	47Ω			
R7	150Ω				R14	33Ω			
R8	47K								

PRINTED BOARD

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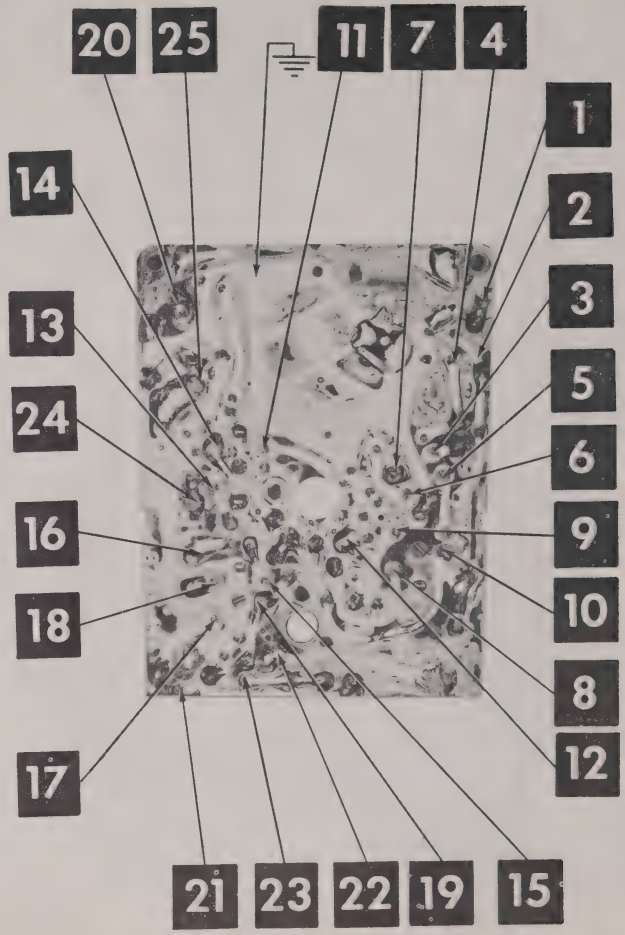


PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		SILVERTONE PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	Loopstick	44511-8				
L2	Osc.	45783-17				
L3	1st IF	47163-4				
L4	2nd IF	47163-5				
L5	3rd IF	47163-6				

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SILVERTONE PART No.	QUAM PART No.	
SP1	2 3/4"	PM	600Ω	46467-2		

BATTERIES

ITEM No.	VOLTAGE	SILVERTONE PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V	6418 or 6421		P6		226		M-1600	

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		SILVERTONE PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N295			1N295	1N295	Detector (Pigtail)

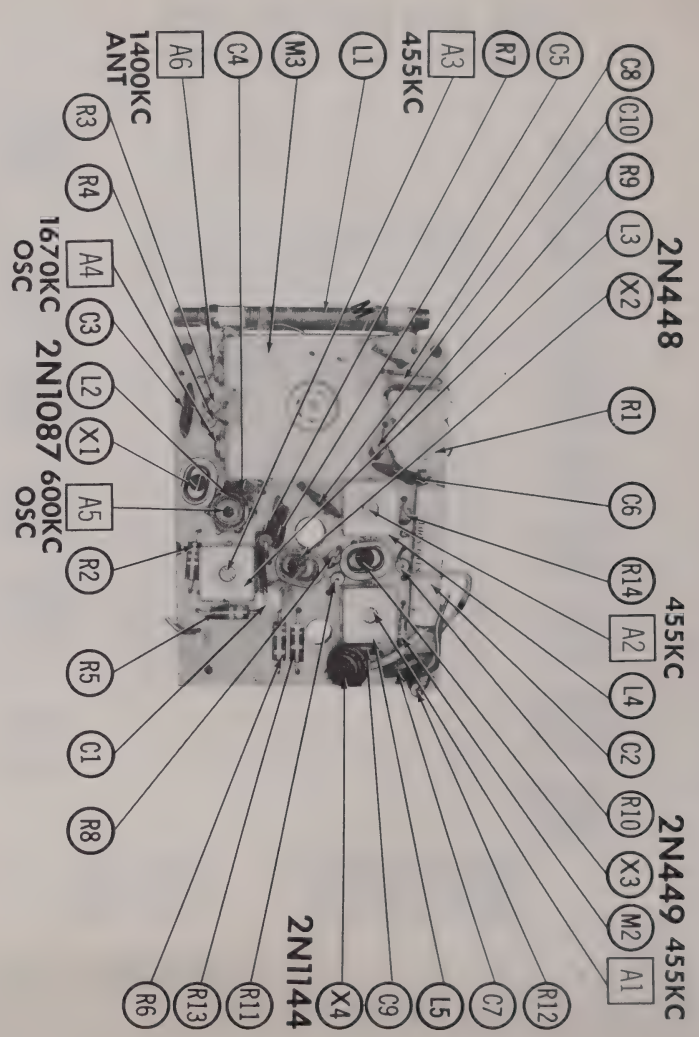
MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M3	Tuning Cap.	48930	2 Gang

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



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SONY MODEL TR-712

SONY MODEL TR-712

SONY MODEL TR-712

TRADE NAME	Sony Model TR-712
IMPORTER	Sony Corp. of America, 512 Broadway, New York 12, N. Y.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	4.5 Volts DC RATING 11 MA @ 4.5 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	535 — 1605KC 30 MA @ 4.5 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1, A2, A3... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538
A4, A7..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1600KC	1600KC	"	A4	"
3.	"	600KC	600KC	"	A5, A6	"
4.	"	1400KC	1400KC Signal	"	A7	Adjust for maximum output. Repeat Steps 2, 3 and 4.

DISASSEMBLY

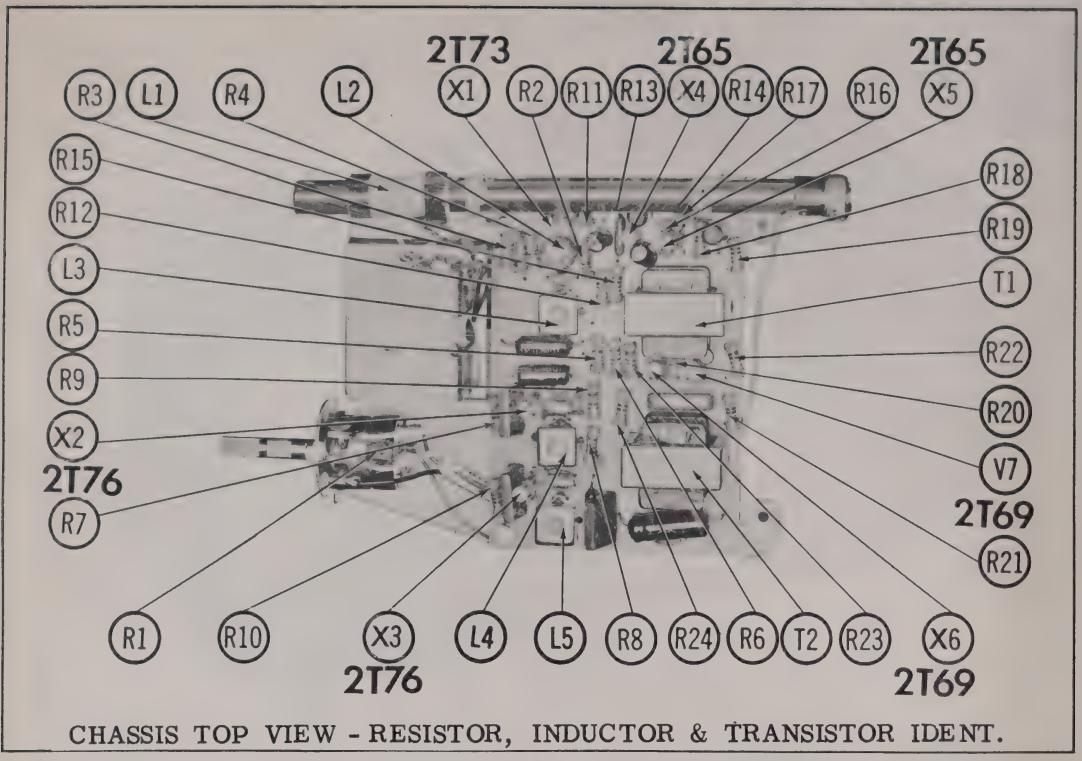
1. Open Rear Cover.
2. Remove Tuning and Volume Control Knobs (Pull).
3. Remove Batteries.
4. Remove 2 Screws near Tuning Gang, and 2 Screws on Speaker Frame.
5. Remove Chassis.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

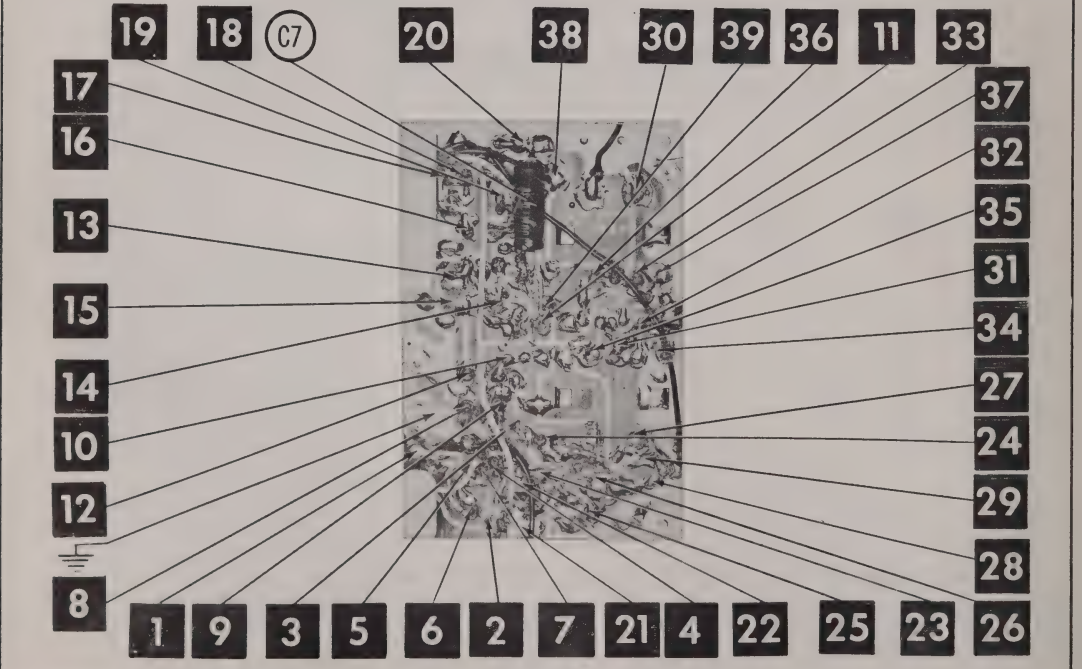
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

KG428

SET 528 FOLDER 14



CHASSIS TOP VIEW - RESISTOR, INDUCTOR & TRANSISTOR IDENT.



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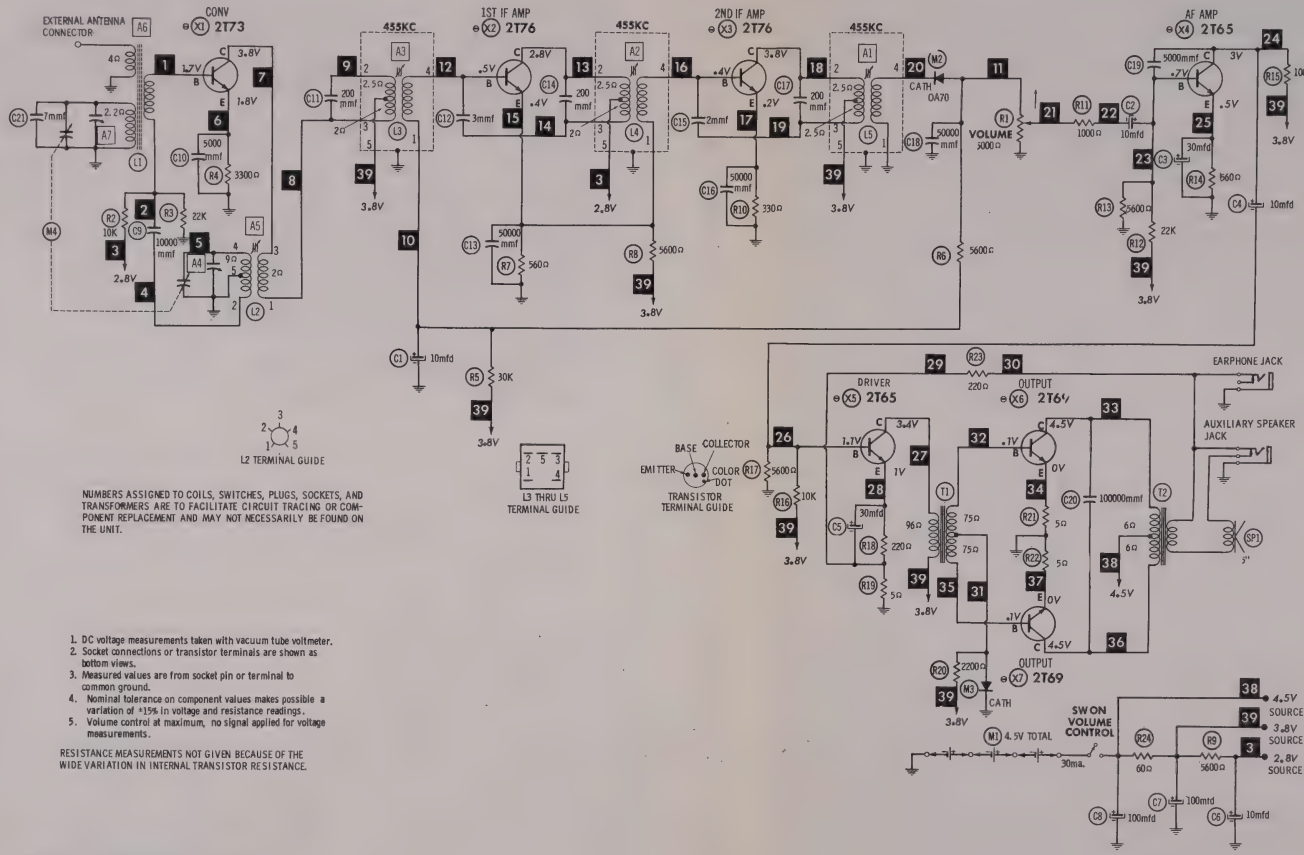

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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SONY MODEL TR-712

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2T73	Converter			2N212	NPN
	2T7 *	Converter				
	2SC73 *	Converter				
X2	2T76	1st IF Amplifier				NPN
	2T7 *	1st IF Amplifier				
	2SC76 *	1st IF Amplifier				
X3	2T76	2nd IF Amplifier				NPN
	2T7 *	2nd IF Amplifier				
	2SC76	2nd IF Amplifier				
X4	2T65	AF Amp.			2N214	NPN
	2T6 *	AF Amp.				
	2SD64 *	AF Amp.				
X5	2T65	Driver			2N214	NPN
	2T6 *	Driver				
	2SD66 *	Driver				
X6	2T69	Output				NPN
	2T8 *	Output				
	2SB48 *	Output				
X7	2T69	Output				NPN
	2T8 *	Output				
	2SB48 *	Output				

* Alternate Type.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	SONY PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	10	3		PTT-3010	NLW10-6	TT3X10	MLV10-3	TE-1053	
C2	10	3		PTT-3010	NLW10-6	TT3X10	MLV10-3	TE-1053	
C3	30	3		PTT-3030	NLW30-6	TT6X30	MLV30-6	TE-1092	
C4	10	3		PTT-3010	NLW10-6	TT3X10	MLV10-3	TE-1053	
C5	30	3		PTT-3030	NLW30-6	TT6X30	MLV30-6	TE-1092	
C6	10	6		PTT-6010	NLW10-6	TT6X10	MLV10-6	TE-1087	
C7	100	6		PTT-6100	NLW100-12	TT6X100	MLV100-6	TE-1102	
C8	100	6		PTT-6100	NLW100-12	TT6X100	MLV100-6	TE-1102	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C9	10000		SI 10000	D6-103	BYA10S1	CCD-103	B-110	5HK-S10
C10	5000		SI 5000	D6-502	BYA10D5	CCD-502	B-250	5HK-D50
C11	200		SI 200	D6-201	L10T2	CCD-201	GP320	10TS-T20
C12	3		NPO-DI 3.0	DTZ-3R3	C10V3C	CCTO-3R3	CNO-533	10TCC-V33
C13	50000		BPD-05	DD-503	H-05S5	IDP-2-503	GP150	5HK-S50
C14	200		SI 200	D6-201	L10T2	CCD-201	GP320	10TS-T20
C15	2		NPO-DI 2.2	DTZ-2R2	C10V2C	CCTO-2R2	CNO-522	10TCC-V22
C16	50000		BPD-05	DD-503	H-05S5	IDP-2-502	GP150	5HK-S50
C17	200		SI 200	D6-201	L10T2	CCD-201	GP320	10TS-T20
C18	50000		BPD-05	DD-503	H-05S5	IDP-2-503	GP150	5HK-S50
C19	5000		SI 5000	D6-502	BYA10D5	CCD-502	B-250	5HK-D50
C20	100000		C80V104AM	DDA-104	H-05P1	IDP-2-104	TA-010	TG-P10
C21	7		NPO-DI 6.8	DTZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SONY PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	5000Ω	½		AB-11				Volume
B	Shaft			AK-29				
C	Switch			KR-3				Power Off-On

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	10K				R14	560Ω			
R3	22K				R15	1000Ω			
R4	3300Ω				R16	10K			
R5	30K				R17	5600Ω			
R6	5600Ω				R18	220Ω			
R7	560Ω				R19	5.0Ω			
R8	5600Ω				R20	2200Ω			
R9	5600Ω				R21	5.0Ω			
R10	330Ω				R22	5.0Ω			
R11	1000Ω				R23	220Ω			
R12	22K				R24	60Ω			
R13	5600Ω								

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		SONY PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	Loopstick	LA-004-F				
L2	Osc.	LO-007-2				
L3	1st IF	LI-003-AM				
L4	2nd IF	LI-003-BM				
L5	3rd IF	LI-003-CM				

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	SONY PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1	1	TI-005					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	SONY PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	250Ω CT	6-8Ω	TX-006					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SONY PART No.	QUAM PART No.	
SP1	5"	PM	6-8Ω		5A07Z8	

BATTERIES

ITEM No.	VOLTAGE	SONY PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V			230 *		A100 *		M-13R *	* 3 Required

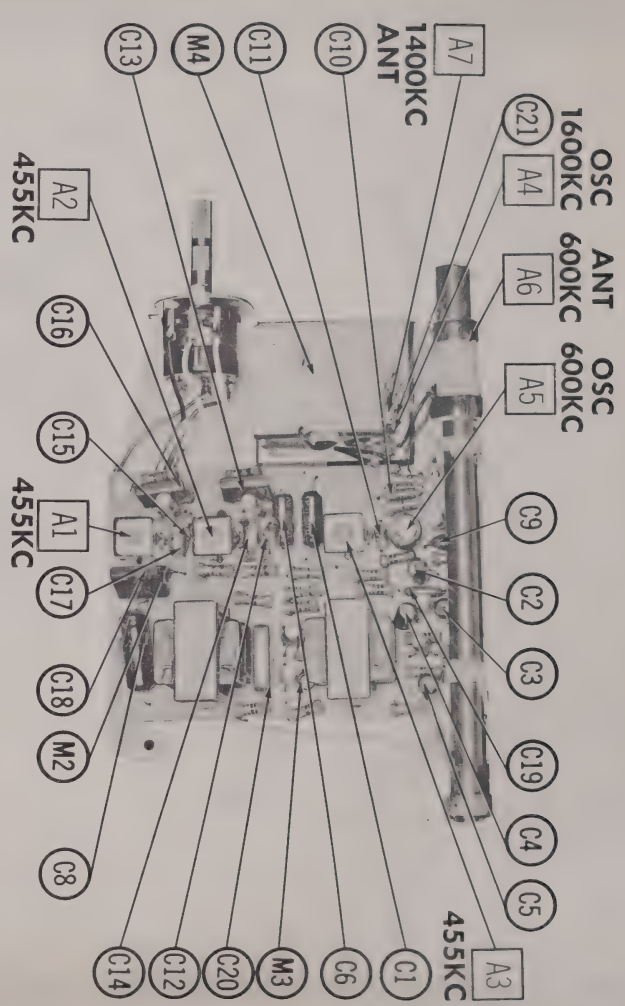
SIGNAL DIODES

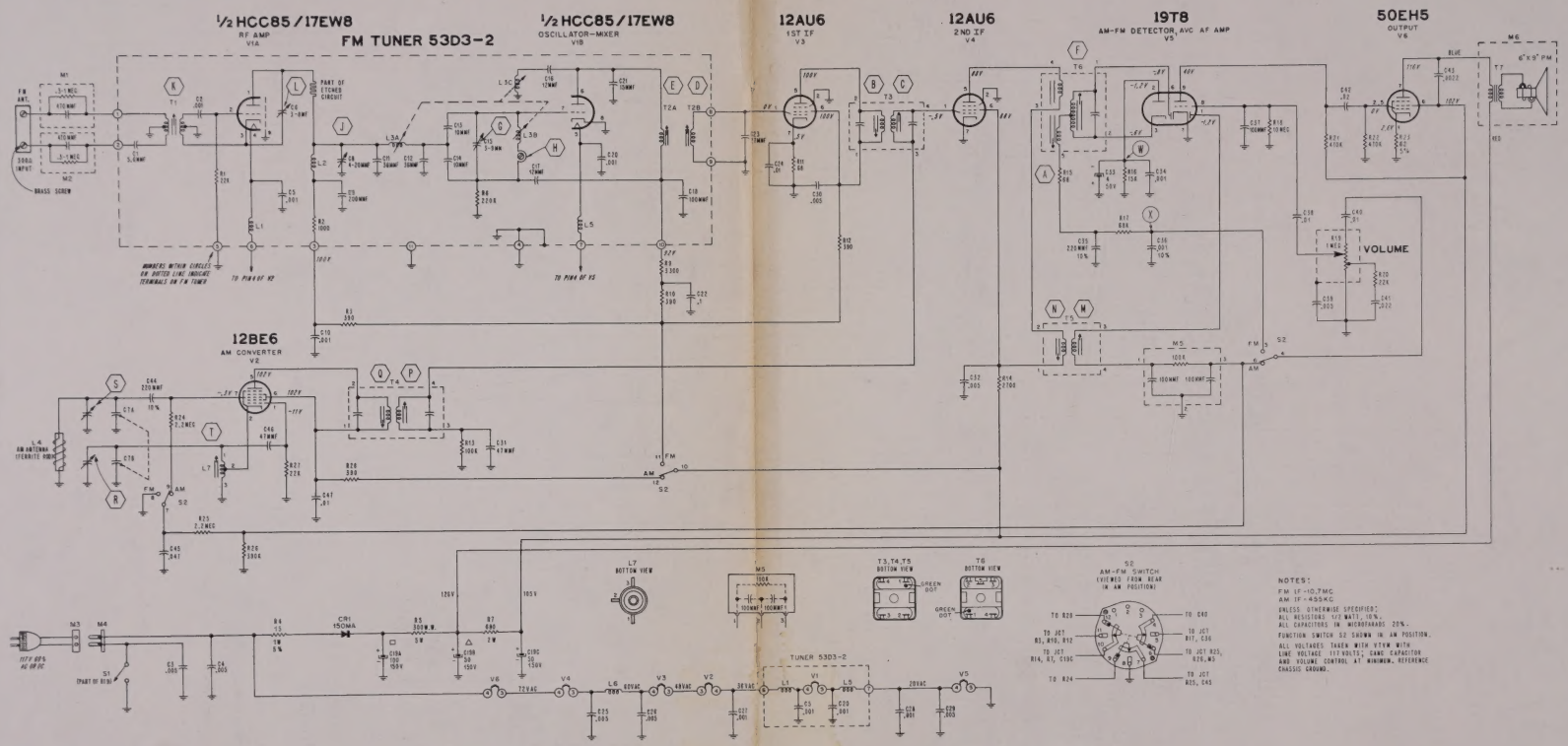
ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		SONY PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2 M3	OA70	1T23G 1T51		1N60	1N60	Detector (Pigtail) Bias Regulator

MISCELLANEOUS

ITEM No.	PART NAME	SONY PART No.	NOTES
M4	Tuning Cap.	CV-016	2 Gang

CHASSIS—TOP VIEW





VOLTAGE DATA

All readings made between tube socket terminals and chassis ground.

Dial turned to low frequency end; volume control at minimum.

All voltages measured with vacuum-tube voltmeter, on 117 Volts AC line.

ADMIRAL MODELS Y3071, Y3077, Y3079 (CH. 6J3)

Schematic Diagram Courtesy of Admiral Corporation

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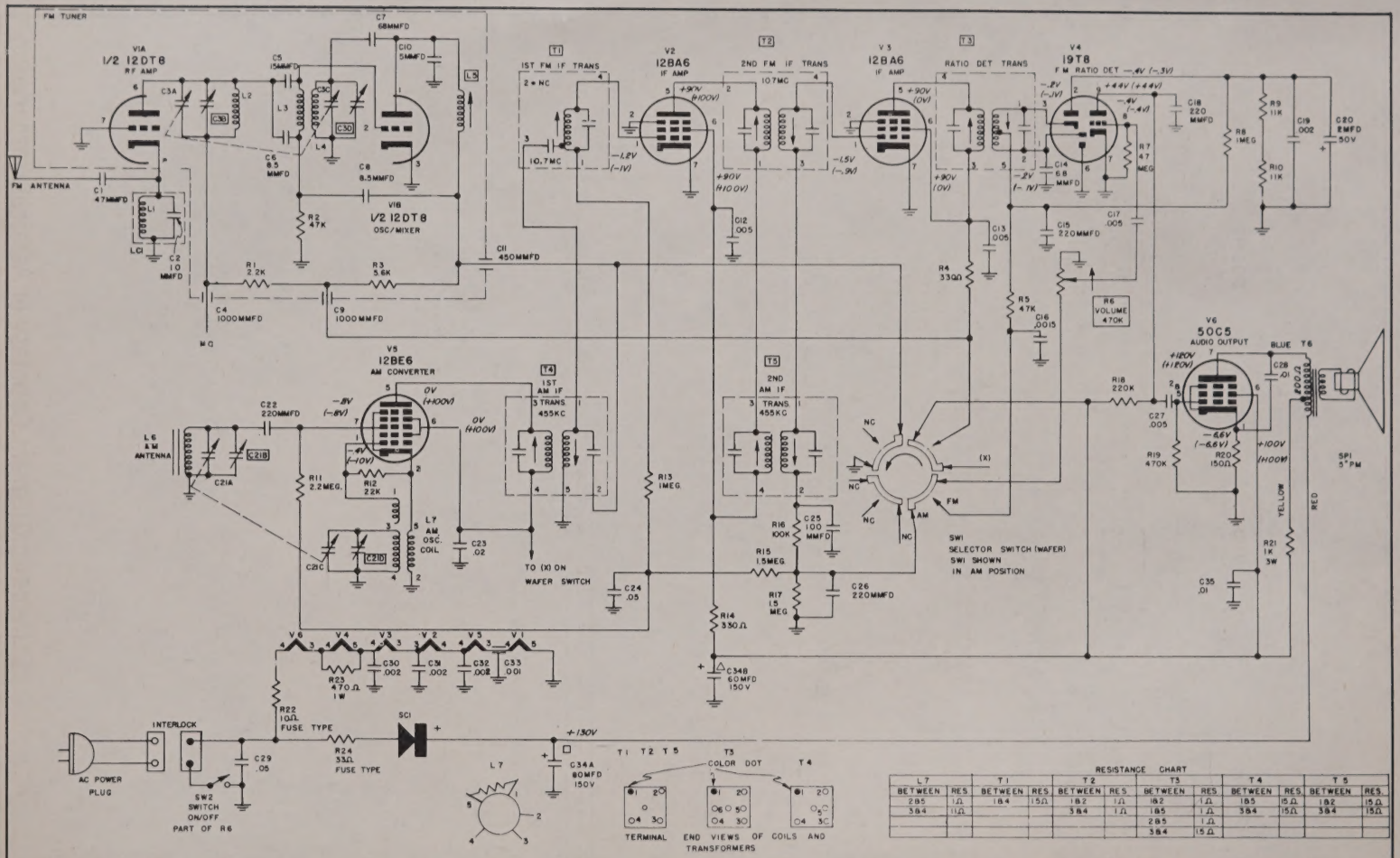
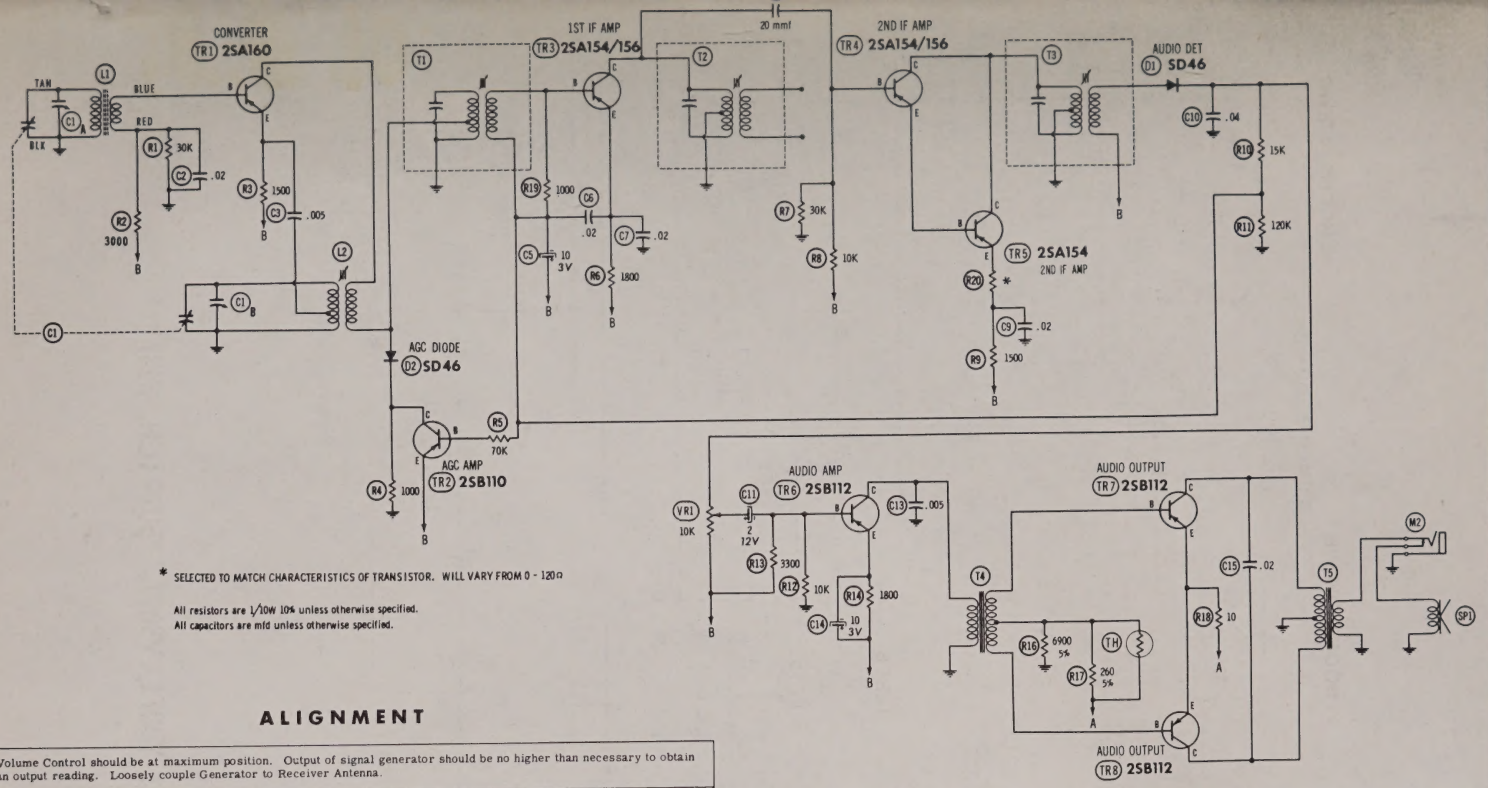


RESISTANCE CHART

L7		T1		T2		T3		T4		T5	
BETWEEN	RES.	BETWEEN	RES.	BETWEEN	RES.	BETWEEN	RES.	BETWEEN	RES.	BETWEEN	RES.
2&5	1Ω	1&4	15Ω	1&2	1Ω	1&2	1Ω	1&5	15Ω	1&2	15Ω
3&4	11Ω			3&4	1Ω	1&5	1Ω	3&4	15Ω	3&4	15Ω
						2&5	1Ω				
						3&4	15Ω				

SCHEMATIC NOTES

1. VOLTAGES SHOWN ARE AVERAGE READINGS MEASURED TO CHASSIS WITH NO SIGNAL INPUT. VARIATIONS MAY BE NOTED DUE TO NORMAL PRODUCTION TOLERANCES. VOLTAGE READINGS IN BRACKETS TAKEN WITH SELECTOR SWITCH IN THE AM POSITION. VOLTAGE READINGS WITHOUT BRACKETS TAKEN WITH SELECTOR SWITCH IN THE FM POSITION.
2. RESISTANCES MEASURED WITH COMPONENTS IN THE CIRCUIT.
3. AC POWER SOURCE 117 VOLT, 60 CYCLE.
4. CAPACITANCE IN MICROFARADS UNLESS OTHERWISE SPECIFIED.
5. ⏚ DESIGNATES CHASSIS GROUND.



* SELECTED TO MATCH CHARACTERISTICS OF TRANSISTOR. WILL VARY FROM 0 - 120Ω

All resistors are 1/10W 10% unless otherwise specified.
All capacitors are mfd unless otherwise specified.

ALIGNMENT

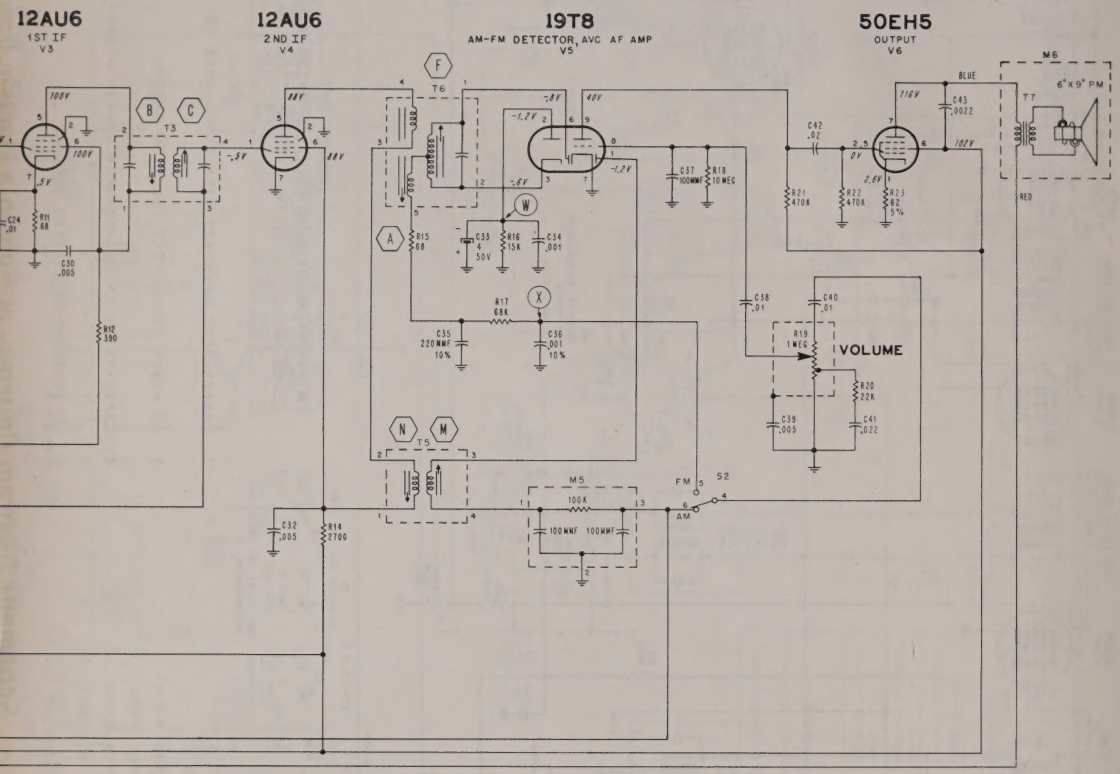
Volume Control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Loosely couple Generator to Receiver Antenna.

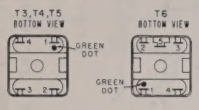
SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
Loop	455KC	Tuning Gang fully open	Across voice coil	T3, T2 & T1	Adjust for maximum output.
Loop	535KC	Tuning Gang closed	Across voice coil	L2, *L1	Adjust for maximum output.
Loop	1600KC	1600KC	Across voice coil	C1B, C1A	Adjust for maximum output.
Loop	535KC	535KC	Across voice coil		Recheck Step 2.

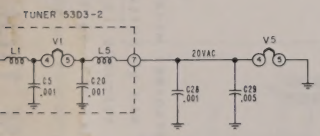
* If new Antenna is inserted adjust L1 by moving coil. Wax into place after it has been properly adjusted.

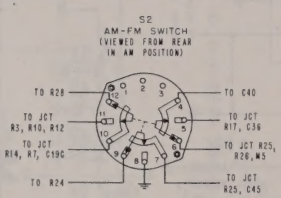
MAGNAVOX MODEL AM-80

Schematic Diagram Courtesy of The Magnavox Company









NOTES:

FM IF-10.7MC
AM IF-455KC

UNLESS OTHERWISE SPECIFIED:
ALL RESISTORS 1/2 WATT, 10%.
ALL CAPACITORS IN MICROFARADS 20%.

FUNCTION SWITCH S2 SHOWN IN AM POSITION.

ALL VOLTAGES TAKEN WITH VTVM WITH LINE VOLTAGE 117 VOLTS; GANG CAPACITOR AND VOLUME CONTROL AT MINIMUM. REFERENCE CHASSIS GROUND.

DATA

between tube
chassis ground.

frequency end;
minimum.

d with vacuum-
117 Volts AC

Schematic Diagram Courtesy of Admiral Corporation